

# Ephemeride für den Kleinplaneten (18) Melpomene

Alle Zeiten gelten für den Standort Boden (50.5° N, 7.9° O)

Die TOpt bezieht sich auf eine Sonnenhöhe von -16°

| Datum         | RA (2000.0) | D (2000.0)  | r            | Entferng. | Elong.   | Azim  | Höhe | Hell | Aufg. | Kulm. | KHöh  | Untg. | TOpt  | TOptH | Stb. |     |
|---------------|-------------|-------------|--------------|-----------|----------|-------|------|------|-------|-------|-------|-------|-------|-------|------|-----|
| So 01.01.2012 | 00:00       | 16h16' 1.5" | -13°19'10.4" | 2.671 aE  | 3.404 aE | 36.0° | 223° | -46° | 12.0/ | 05:10 | 10:05 | +26°  | 14:54 | 06:42 | +12° | OPH |
| Mo 02.01.2012 | 00:00       | 16h17'40.0" | -13°22' 5.6" | 2.670 aE  | 3.394 aE | 36.6° | 223° | -46° | 12.0/ | 05:08 | 10:02 | +26°  | 14:51 | 06:42 | +13° | OPH |
| Di 03.01.2012 | 00:00       | 16h19'18.4" | -13°24'55.7" | 2.669 aE  | 3.385 aE | 37.2° | 224° | -46° | 12.0/ | 05:06 | 10:00 | +26°  | 14:49 | 06:42 | +13° | OPH |
| Mi 04.01.2012 | 00:00       | 16h20'56.7" | -13°27'40.6" | 2.667 aE  | 3.375 aE | 37.8° | 225° | -45° | 12.0/ | 05:04 | 09:58 | +26°  | 14:46 | 06:42 | +13° | OPH |
| Do 05.01.2012 | 00:00       | 16h22'34.9" | -13°30'20.4" | 2.666 aE  | 3.365 aE | 38.4° | 226° | -45° | 12.0/ | 05:02 | 09:55 | +26°  | 14:43 | 06:42 | +13° | OPH |
| Fr 06.01.2012 | 00:00       | 16h24'13.0" | -13°32'55.0" | 2.664 aE  | 3.355 aE | 39.0° | 226° | -45° | 11.9/ | 05:00 | 09:53 | +26°  | 14:41 | 06:42 | +14° | OPH |
| Sa 07.01.2012 | 00:00       | 16h25'50.9" | -13°35'24.3" | 2.663 aE  | 3.345 aE | 39.6° | 227° | -45° | 11.9/ | 04:58 | 09:51 | +26°  | 14:38 | 06:41 | +14° | OPH |
| So 08.01.2012 | 00:00       | 16h27'28.8" | -13°37'48.5" | 2.661 aE  | 3.335 aE | 40.2° | 228° | -45° | 11.9/ | 04:56 | 09:48 | +26°  | 14:36 | 06:41 | +14° | OPH |
| Mo 09.01.2012 | 00:00       | 16h29' 6.5" | -13°40' 7.5" | 2.660 aE  | 3.325 aE | 40.8° | 228° | -44° | 11.9/ | 04:54 | 09:46 | +26°  | 14:33 | 06:41 | +14° | OPH |
| Di 10.01.2012 | 00:00       | 16h30'44.1" | -13°42'21.2" | 2.658 aE  | 3.315 aE | 41.4° | 229° | -44° | 11.9/ | 04:52 | 09:44 | +26°  | 14:31 | 06:41 | +14° | OPH |
| Mi 11.01.2012 | 00:00       | 16h32'21.6" | -13°44'29.7" | 2.657 aE  | 3.304 aE | 42.1° | 230° | -44° | 11.9/ | 04:49 | 09:42 | +26°  | 14:28 | 06:40 | +15° | OPH |
| Do 12.01.2012 | 00:00       | 16h33'58.9" | -13°46'32.9" | 2.656 aE  | 3.294 aE | 42.7° | 231° | -44° | 11.9/ | 04:47 | 09:39 | +26°  | 14:26 | 06:40 | +15° | OPH |
| Fr 13.01.2012 | 00:00       | 16h35'36.1" | -13°48'30.8" | 2.654 aE  | 3.283 aE | 43.3° | 231° | -43° | 11.9/ | 04:45 | 09:37 | +26°  | 14:23 | 06:40 | +15° | OPH |
| Sa 14.01.2012 | 00:00       | 16h37'13.1" | -13°50'23.4" | 2.653 aE  | 3.272 aE | 43.9° | 232° | -43° | 11.9/ | 04:43 | 09:35 | +26°  | 14:21 | 06:39 | +15° | OPH |
| So 15.01.2012 | 00:00       | 16h38'50.0" | -13°52'10.8" | 2.651 aE  | 3.261 aE | 44.5° | 233° | -43° | 11.9/ | 04:41 | 09:32 | +26°  | 14:18 | 06:39 | +15° | OPH |
| Mo 16.01.2012 | 00:00       | 16h40'26.7" | -13°53'52.8" | 2.649 aE  | 3.250 aE | 45.1° | 233° | -42° | 11.9/ | 04:39 | 09:30 | +26°  | 14:16 | 06:38 | +16° | OPH |
| Di 17.01.2012 | 00:00       | 16h42' 3.2" | -13°55'29.5" | 2.648 aE  | 3.239 aE | 45.7° | 234° | -42° | 11.9/ | 04:36 | 09:28 | +26°  | 14:13 | 06:38 | +16° | OPH |
| Mi 18.01.2012 | 00:00       | 16h43'39.6" | -13°57' 0.9" | 2.646 aE  | 3.228 aE | 46.3° | 235° | -42° | 11.9/ | 04:34 | 09:25 | +26°  | 14:11 | 06:37 | +16° | OPH |
| Do 19.01.2012 | 00:00       | 16h45'15.7" | -13°58'26.9" | 2.645 aE  | 3.217 aE | 47.0° | 235° | -42° | 11.9/ | 04:32 | 09:23 | +26°  | 14:09 | 06:36 | +16° | OPH |
| Fr 20.01.2012 | 00:00       | 16h46'51.7" | -13°59'47.6" | 2.643 aE  | 3.205 aE | 47.6° | 236° | -41° | 11.9/ | 04:30 | 09:21 | +26°  | 14:06 | 06:36 | +16° | OPH |
| Sa 21.01.2012 | 00:00       | 16h48'27.4" | -14° 1' 2.9" | 2.642 aE  | 3.194 aE | 48.2° | 237° | -41° | 11.9/ | 04:27 | 09:18 | +25°  | 14:04 | 06:35 | +16° | OPH |
| So 22.01.2012 | 00:00       | 16h50' 2.9" | -14° 2'12.9" | 2.640 aE  | 3.182 aE | 48.8° | 237° | -41° | 11.9/ | 04:25 | 09:16 | +25°  | 14:01 | 06:34 | +16° | OPH |
| Mo 23.01.2012 | 00:00       | 16h51'38.2" | -14° 3'17.5" | 2.639 aE  | 3.171 aE | 49.4° | 238° | -40° | 11.9/ | 04:23 | 09:14 | +25°  | 13:59 | 06:33 | +17° | OPH |
| Di 24.01.2012 | 00:00       | 16h53'13.3" | -14° 4'16.8" | 2.637 aE  | 3.159 aE | 50.1° | 239° | -40° | 11.9/ | 04:21 | 09:11 | +25°  | 13:57 | 06:32 | +17° | OPH |
| Mi 25.01.2012 | 00:00       | 16h54'48.1" | -14° 5'10.7" | 2.636 aE  | 3.147 aE | 50.7° | 239° | -40° | 11.9/ | 04:18 | 09:09 | +25°  | 13:54 | 06:31 | +17° | OPH |
| Do 26.01.2012 | 00:00       | 16h56'22.6" | -14° 5'59.2" | 2.634 aE  | 3.135 aE | 51.3° | 240° | -40° | 11.9/ | 04:16 | 09:06 | +25°  | 13:52 | 06:30 | +17° | OPH |
| Fr 27.01.2012 | 00:00       | 16h57'56.9" | -14° 6'42.4" | 2.632 aE  | 3.123 aE | 51.9° | 240° | -39° | 11.9/ | 04:14 | 09:04 | +25°  | 13:49 | 06:29 | +17° | OPH |
| Sa 28.01.2012 | 00:00       | 16h59'30.9" | -14° 7'20.3" | 2.631 aE  | 3.111 aE | 52.6° | 241° | -39° | 11.9/ | 04:12 | 09:02 | +25°  | 13:47 | 06:28 | +17° | OPH |
| So 29.01.2012 | 00:00       | 17h 1' 4.6" | -14° 7'52.9" | 2.629 aE  | 3.098 aE | 53.2° | 242° | -39° | 11.9/ | 04:09 | 08:59 | +25°  | 13:45 | 06:27 | +17° | OPH |
| Mo 30.01.2012 | 00:00       | 17h 2'38.1" | -14° 8'20.1" | 2.627 aE  | 3.086 aE | 53.8° | 242° | -38° | 11.9/ | 04:07 | 08:57 | +25°  | 13:42 | 06:26 | +18° | OPH |
| Di 31.01.2012 | 00:00       | 17h 4'11.2" | -14° 8'42.1" | 2.626 aE  | 3.073 aE | 54.4° | 243° | -38° | 11.9/ | 04:05 | 08:55 | +25°  | 13:40 | 06:25 | +18° | SER |
| Mi 01.02.2012 | 00:00       | 17h 5'44.0" | -14° 8'58.8" | 2.624 aE  | 3.061 aE | 55.1° | 243° | -38° | 11.9/ | 04:02 | 08:52 | +25°  | 13:37 | 06:24 | +18° | SER |
| Do 02.02.2012 | 00:00       | 17h 7'16.5" | -14° 9'10.1" | 2.623 aE  | 3.048 aE | 55.7° | 244° | -37° | 11.8/ | 04:00 | 08:50 | +25°  | 13:35 | 06:23 | +18° | SER |
| Fr 03.02.2012 | 00:00       | 17h 8'48.7" | -14° 9'16.2" | 2.621 aE  | 3.036 aE | 56.3° | 245° | -37° | 11.8/ | 03:58 | 08:47 | +25°  | 13:32 | 06:21 | +18° | SER |
| Sa 04.02.2012 | 00:00       | 17h10'20.6" | -14° 9'17.1" | 2.619 aE  | 3.023 aE | 57.0° | 245° | -37° | 11.8/ | 03:55 | 08:45 | +25°  | 13:30 | 06:20 | +18° | SER |
| So 05.02.2012 | 00:00       | 17h11'52.1" | -14° 9'12.7" | 2.618 aE  | 3.010 aE | 57.6° | 246° | -36° | 11.8/ | 03:53 | 08:43 | +25°  | 13:28 | 06:19 | +18° | SER |
| Mo 06.02.2012 | 00:00       | 17h13'23.3" | -14° 9' 3.1" | 2.616 aE  | 2.997 aE | 58.2° | 246° | -36° | 11.8/ | 03:50 | 08:40 | +25°  | 13:25 | 06:17 | +18° | SER |
| Di 07.02.2012 | 00:00       | 17h14'54.2" | -14° 8'48.3" | 2.614 aE  | 2.984 aE | 58.9° | 247° | -35° | 11.8/ | 03:48 | 08:38 | +25°  | 13:23 | 06:16 | +18° | SER |
| Mi 08.02.2012 | 00:00       | 17h16'24.6" | -14° 8'28.3" | 2.613 aE  | 2.971 aE | 59.5° | 248° | -35° | 11.8/ | 03:46 | 08:35 | +25°  | 13:20 | 06:15 | +19° | SER |
| Do 09.02.2012 | 00:00       | 17h17'54.7" | -14° 8' 3.0" | 2.611 aE  | 2.958 aE | 60.1° | 248° | -35° | 11.8/ | 03:43 | 08:33 | +25°  | 13:18 | 06:13 | +19° | SER |

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| Datum         | RA (2000.0) | D (2000.0)  | r            | Entferng. | Elong.   | Azim  | Höhe      | Hell  | Aufg. | Kulm. | KHöh | Untg. | TOpt  | TOptH | Stb. |
|---------------|-------------|-------------|--------------|-----------|----------|-------|-----------|-------|-------|-------|------|-------|-------|-------|------|
| Fr 10.02.2012 | 00:00       | 17h19'24.5" | -14° 7'32.6" | 2.609 aE  | 2.945 aE | 60.8° | 249° -34° | 11.8/ | 03:41 | 08:30 | +25° | 13:16 | 06:12 | +19°  | SER  |
| Sa 11.02.2012 | 00:00       | 17h20'53.8" | -14° 6'57.1" | 2.608 aE  | 2.931 aE | 61.4° | 249° -34° | 11.8/ | 03:38 | 08:28 | +25° | 13:13 | 06:10 | +19°  | SER  |
| So 12.02.2012 | 00:00       | 17h22'22.8" | -14° 6'16.4" | 2.606 aE  | 2.918 aE | 62.1° | 250° -34° | 11.8/ | 03:36 | 08:25 | +25° | 13:11 | 06:09 | +19°  | SER  |
| Mo 13.02.2012 | 00:00       | 17h23'51.3" | -14° 5'30.6" | 2.604 aE  | 2.904 aE | 62.7° | 250° -33° | 11.8/ | 03:33 | 08:23 | +25° | 13:08 | 06:07 | +19°  | SER  |
| Di 14.02.2012 | 00:00       | 17h25'19.5" | -14° 4'39.7" | 2.602 aE  | 2.891 aE | 63.4° | 251° -33° | 11.8/ | 03:31 | 08:21 | +25° | 13:06 | 06:05 | +19°  | SER  |
| Mi 15.02.2012 | 00:00       | 17h26'47.2" | -14° 3'43.7" | 2.601 aE  | 2.877 aE | 64.0° | 251° -32° | 11.8/ | 03:28 | 08:18 | +25° | 13:03 | 06:04 | +19°  | SER  |
| Do 16.02.2012 | 00:00       | 17h28'14.4" | -14° 2'42.7" | 2.599 aE  | 2.864 aE | 64.6° | 252° -32° | 11.7/ | 03:25 | 08:16 | +25° | 13:01 | 06:02 | +19°  | SER  |
| Fr 17.02.2012 | 00:00       | 17h29'41.2" | -14° 1'36.6" | 2.597 aE  | 2.850 aE | 65.3° | 253° -32° | 11.7/ | 03:23 | 08:13 | +26° | 12:59 | 06:00 | +19°  | SER  |
| Sa 18.02.2012 | 00:00       | 17h31' 7.6" | -14° 0'25.5" | 2.595 aE  | 2.836 aE | 65.9° | 253° -31° | 11.7/ | 03:20 | 08:11 | +26° | 12:56 | 05:59 | +19°  | SER  |
| So 19.02.2012 | 00:00       | 17h32'33.5" | -13°59' 9.5" | 2.594 aE  | 2.822 aE | 66.6° | 254° -31° | 11.7/ | 03:18 | 08:08 | +26° | 12:54 | 05:57 | +20°  | SER  |
| Mo 20.02.2012 | 00:00       | 17h33'58.9" | -13°57'48.5" | 2.592 aE  | 2.808 aE | 67.3° | 254° -30° | 11.7/ | 03:15 | 08:06 | +26° | 12:51 | 05:55 | +20°  | SER  |
| Di 21.02.2012 | 00:00       | 17h35'23.7" | -13°56'22.6" | 2.590 aE  | 2.795 aE | 67.9° | 255° -30° | 11.7/ | 03:12 | 08:03 | +26° | 12:49 | 05:53 | +20°  | SER  |
| Mi 22.02.2012 | 00:00       | 17h36'48.1" | -13°54'51.8" | 2.588 aE  | 2.781 aE | 68.6° | 255° -30° | 11.7/ | 03:10 | 08:01 | +26° | 12:47 | 05:51 | +20°  | SER  |
| Do 23.02.2012 | 00:00       | 17h38'12.0" | -13°53'16.2" | 2.587 aE  | 2.766 aE | 69.2° | 256° -29° | 11.7/ | 03:07 | 07:58 | +26° | 12:44 | 05:50 | +20°  | SER  |
| Fr 24.02.2012 | 00:00       | 17h39'35.3" | -13°51'35.8" | 2.585 aE  | 2.752 aE | 69.9° | 256° -29° | 11.7/ | 03:04 | 07:55 | +26° | 12:42 | 05:48 | +20°  | SER  |
| Sa 25.02.2012 | 00:00       | 17h40'58.0" | -13°49'50.7" | 2.583 aE  | 2.738 aE | 70.5° | 257° -28° | 11.7/ | 03:01 | 07:53 | +26° | 12:39 | 05:46 | +20°  | SER  |
| So 26.02.2012 | 00:00       | 17h42'20.2" | -13°48' 0.9" | 2.581 aE  | 2.724 aE | 71.2° | 257° -28° | 11.7/ | 02:59 | 07:50 | +26° | 12:37 | 05:44 | +20°  | SER  |
| Mo 27.02.2012 | 00:00       | 17h43'41.9" | -13°46' 6.4" | 2.579 aE  | 2.710 aE | 71.9° | 258° -28° | 11.6/ | 02:56 | 07:48 | +26° | 12:34 | 05:42 | +20°  | SER  |
| Di 28.02.2012 | 00:00       | 17h45' 2.9" | -13°44' 7.3" | 2.577 aE  | 2.695 aE | 72.5° | 258° -27° | 11.6/ | 02:53 | 07:45 | +26° | 12:32 | 05:40 | +20°  | SER  |
| Mi 29.02.2012 | 00:00       | 17h46'23.4" | -13°42' 3.6" | 2.576 aE  | 2.681 aE | 73.2° | 259° -27° | 11.6/ | 02:50 | 07:43 | +26° | 12:30 | 05:38 | +20°  | SER  |
| Do 01.03.2012 | 00:00       | 17h47'43.3" | -13°39'55.4" | 2.574 aE  | 2.667 aE | 73.9° | 259° -26° | 11.6/ | 02:47 | 07:40 | +26° | 12:27 | 05:36 | +20°  | SER  |
| Fr 02.03.2012 | 00:00       | 17h49' 2.5" | -13°37'42.7" | 2.572 aE  | 2.652 aE | 74.5° | 260° -26° | 11.6/ | 02:45 | 07:37 | +26° | 12:25 | 05:34 | +21°  | SER  |
| Sa 03.03.2012 | 00:00       | 17h50'21.2" | -13°35'25.6" | 2.570 aE  | 2.638 aE | 75.2° | 260° -25° | 11.6/ | 02:42 | 07:35 | +26° | 12:22 | 05:32 | +21°  | SER  |
| So 04.03.2012 | 00:00       | 17h51'39.2" | -13°33' 4.1" | 2.568 aE  | 2.623 aE | 75.9° | 261° -25° | 11.6/ | 02:39 | 07:32 | +26° | 12:20 | 05:29 | +21°  | SER  |
| Mo 05.03.2012 | 00:00       | 17h52'56.5" | -13°30'38.3" | 2.566 aE  | 2.609 aE | 76.6° | 261° -25° | 11.6/ | 02:36 | 07:29 | +26° | 12:17 | 05:27 | +21°  | SER  |
| Di 06.03.2012 | 00:00       | 17h54'13.2" | -13°28' 8.1" | 2.565 aE  | 2.594 aE | 77.2° | 262° -24° | 11.6/ | 02:33 | 07:27 | +26° | 12:15 | 05:25 | +21°  | SER  |
| Mi 07.03.2012 | 00:00       | 17h55'29.2" | -13°25'33.8" | 2.563 aE  | 2.580 aE | 77.9° | 262° -24° | 11.6/ | 02:30 | 07:24 | +26° | 12:13 | 05:23 | +21°  | SER  |
| Do 08.03.2012 | 00:00       | 17h56'44.6" | -13°22'55.2" | 2.561 aE  | 2.565 aE | 78.6° | 263° -23° | 11.5/ | 02:27 | 07:21 | +26° | 12:10 | 05:21 | +21°  | SER  |
| Fr 09.03.2012 | 00:00       | 17h57'59.2" | -13°20'12.5" | 2.559 aE  | 2.550 aE | 79.3° | 263° -23° | 11.5/ | 02:24 | 07:19 | +26° | 12:08 | 05:19 | +21°  | SER  |
| Sa 10.03.2012 | 00:00       | 17h59'13.2" | -13°17'25.7" | 2.557 aE  | 2.536 aE | 80.0° | 264° -22° | 11.5/ | 02:21 | 07:16 | +26° | 12:05 | 05:16 | +21°  | SER  |
| So 11.03.2012 | 00:00       | 18h 0'26.4" | -13°14'34.8" | 2.555 aE  | 2.521 aE | 80.6° | 264° -22° | 11.5/ | 02:18 | 07:13 | +26° | 12:03 | 05:14 | +21°  | SER  |
| Mo 12.03.2012 | 00:00       | 18h 1'39.0" | -13°11'40.0" | 2.553 aE  | 2.506 aE | 81.3° | 265° -21° | 11.5/ | 02:15 | 07:11 | +26° | 12:00 | 05:12 | +21°  | SER  |
| Di 13.03.2012 | 00:00       | 18h 2'50.7" | -13° 8'41.2" | 2.551 aE  | 2.492 aE | 82.0° | 266° -21° | 11.5/ | 02:12 | 07:08 | +26° | 11:58 | 05:10 | +21°  | SER  |
| Mi 14.03.2012 | 00:00       | 18h 4' 1.7" | -13° 5'38.6" | 2.549 aE  | 2.477 aE | 82.7° | 266° -20° | 11.5/ | 02:09 | 07:05 | +26° | 11:56 | 05:07 | +21°  | SER  |
| Do 15.03.2012 | 00:00       | 18h 5'12.0" | -13° 2'32.2" | 2.547 aE  | 2.462 aE | 83.4° | 267° -20° | 11.5/ | 02:06 | 07:02 | +26° | 11:53 | 05:05 | +22°  | SER  |
| Fr 16.03.2012 | 00:00       | 18h 6'21.4" | -12°59'22.0" | 2.545 aE  | 2.447 aE | 84.1° | 267° -19° | 11.4/ | 02:03 | 06:59 | +27° | 11:51 | 05:03 | +22°  | SER  |
| Sa 17.03.2012 | 00:00       | 18h 7'30.1" | -12°56' 8.2" | 2.544 aE  | 2.432 aE | 84.8° | 268° -19° | 11.4/ | 02:00 | 06:57 | +27° | 11:48 | 05:00 | +22°  | SER  |
| So 18.03.2012 | 00:00       | 18h 8'37.9" | -12°52'50.8" | 2.542 aE  | 2.418 aE | 85.5° | 268° -18° | 11.4/ | 01:57 | 06:54 | +27° | 11:46 | 04:58 | +22°  | SER  |
| Mo 19.03.2012 | 00:00       | 18h 9'44.8" | -12°49'29.9" | 2.540 aE  | 2.403 aE | 86.2° | 269° -18° | 11.4/ | 01:54 | 06:51 | +27° | 11:43 | 04:55 | +22°  | SCT  |
| Di 20.03.2012 | 00:00       | 18h10'50.9" | -12°46' 5.5" | 2.538 aE  | 2.388 aE | 86.9° | 269° -17° | 11.4/ | 01:51 | 06:48 | +27° | 11:41 | 04:53 | +22°  | SCT  |

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|---------------|-------------|-------------|--------------|-----------|----------|--------|------|------|-------|-------|-------|-------|-------|-------|------|-----|
| Mi 21.03.2012 | 00:00       | 18h11'56.2" | -12°42'37.8" | 2.536 aE  | 2.373 aE | 87.6°  | 270° | -17° | 11.4/ | 01:48 | 06:45 | +27°  | 11:38 | 04:51 | +22° | SCT |
| Do 22.03.2012 | 00:00       | 18h13' 0.5" | -12°39' 6.8" | 2.534 aE  | 2.358 aE | 88.4°  | 270° | -16° | 11.4/ | 01:45 | 06:42 | +27°  | 11:36 | 04:48 | +22° | SCT |
| Fr 23.03.2012 | 00:00       | 18h14' 4.0" | -12°35'32.6" | 2.532 aE  | 2.343 aE | 89.1°  | 271° | -16° | 11.3/ | 01:42 | 06:40 | +27°  | 11:33 | 04:46 | +22° | SCT |
| Sa 24.03.2012 | 00:00       | 18h15' 6.5" | -12°31'55.3" | 2.530 aE  | 2.329 aE | 89.8°  | 271° | -15° | 11.3/ | 01:39 | 06:37 | +27°  | 11:30 | 04:43 | +22° | SCT |
| So 25.03.2012 | 00:00       | 18h16' 5.5" | -12°28'24.2" | 2.528 aE  | 2.314 aE | 90.5°  | 260° | -24° | 11.3/ | 02:35 | 07:34 | +27°  | 12:27 | 05:41 | +22° | SCT |
| Mo 26.03.2012 | 00:00       | 18h17' 6.2" | -12°24'41.1" | 2.526 aE  | 2.300 aE | 91.2°  | 260° | -24° | 11.3/ | 02:32 | 07:31 | +27°  | 12:25 | 05:38 | +23° | SCT |
| Di 27.03.2012 | 00:00       | 18h18' 5.9" | -12°20'55.1" | 2.524 aE  | 2.285 aE | 91.9°  | 261° | -23° | 11.3/ | 02:28 | 07:28 | +27°  | 12:22 | 05:36 | +23° | SCT |
| Mi 28.03.2012 | 00:00       | 18h19' 4.6" | -12°17' 6.4" | 2.522 aE  | 2.270 aE | 92.7°  | 261° | -23° | 11.3/ | 02:25 | 07:25 | +27°  | 12:19 | 05:33 | +23° | SCT |
| Do 29.03.2012 | 00:00       | 18h20' 2.3" | -12°13'15.1" | 2.520 aE  | 2.255 aE | 93.4°  | 262° | -22° | 11.3/ | 02:22 | 07:22 | +27°  | 12:17 | 05:31 | +23° | SCT |
| Fr 30.03.2012 | 00:00       | 18h20'59.0" | -12° 9'21.2" | 2.518 aE  | 2.240 aE | 94.1°  | 263° | -22° | 11.2/ | 02:18 | 07:19 | +27°  | 12:14 | 05:28 | +23° | SCT |
| Sa 31.03.2012 | 00:00       | 18h21'54.7" | -12° 5'24.8" | 2.516 aE  | 2.226 aE | 94.9°  | 263° | -21° | 11.2/ | 02:15 | 07:16 | +27°  | 12:11 | 05:26 | +23° | SCT |
| So 01.04.2012 | 00:00       | 18h22'49.3" | -12° 1'26.0" | 2.514 aE  | 2.211 aE | 95.6°  | 264° | -21° | 11.2/ | 02:12 | 07:13 | +28°  | 12:09 | 05:23 | +23° | SCT |
| Mo 02.04.2012 | 00:00       | 18h23'42.9" | -11°57'24.9" | 2.512 aE  | 2.196 aE | 96.4°  | 264° | -20° | 11.2/ | 02:08 | 07:10 | +28°  | 12:06 | 05:20 | +23° | SCT |
| Di 03.04.2012 | 00:00       | 18h24'35.4" | -11°53'21.7" | 2.510 aE  | 2.182 aE | 97.1°  | 265° | -20° | 11.2/ | 02:05 | 07:07 | +28°  | 12:03 | 05:18 | +23° | SCT |
| Mi 04.04.2012 | 00:00       | 18h25'26.8" | -11°49'16.4" | 2.508 aE  | 2.167 aE | 97.9°  | 265° | -19° | 11.2/ | 02:02 | 07:04 | +28°  | 12:01 | 05:15 | +23° | SCT |
| Do 05.04.2012 | 00:00       | 18h26'17.2" | -11°45' 9.0" | 2.506 aE  | 2.152 aE | 98.6°  | 266° | -19° | 11.1/ | 01:58 | 07:01 | +28°  | 11:58 | 05:13 | +24° | SCT |
| Fr 06.04.2012 | 00:00       | 18h27' 6.4" | -11°40'59.8" | 2.504 aE  | 2.138 aE | 99.4°  | 267° | -18° | 11.1/ | 01:55 | 06:58 | +28°  | 11:55 | 05:10 | +24° | SCT |
| Sa 07.04.2012 | 00:00       | 18h27'54.4" | -11°36'48.8" | 2.501 aE  | 2.123 aE | 100.1° | 267° | -18° | 11.1/ | 01:51 | 06:54 | +28°  | 11:53 | 05:07 | +24° | SCT |
| So 08.04.2012 | 00:00       | 18h28'41.3" | -11°32'36.1" | 2.499 aE  | 2.109 aE | 100.9° | 268° | -17° | 11.1/ | 01:48 | 06:51 | +28°  | 11:50 | 05:05 | +24° | SCT |
| Mo 09.04.2012 | 00:00       | 18h29'27.1" | -11°28'21.8" | 2.497 aE  | 2.094 aE | 101.7° | 268° | -16° | 11.1/ | 01:44 | 06:48 | +28°  | 11:47 | 05:02 | +24° | SCT |
| Di 10.04.2012 | 00:00       | 18h30'11.6" | -11°24' 6.1" | 2.495 aE  | 2.080 aE | 102.4° | 269° | -16° | 11.0/ | 01:41 | 06:45 | +28°  | 11:44 | 04:59 | +24° | SCT |
| Mi 11.04.2012 | 00:00       | 18h30'54.9" | -11°19'49.0" | 2.493 aE  | 2.065 aE | 103.2° | 269° | -15° | 11.0/ | 01:37 | 06:42 | +28°  | 11:41 | 04:57 | +24° | SCT |
| Do 12.04.2012 | 00:00       | 18h31'37.0" | -11°15'30.7" | 2.491 aE  | 2.051 aE | 104.0° | 270° | -15° | 11.0/ | 01:34 | 06:38 | +28°  | 11:39 | 04:54 | +24° | SCT |
| Fr 13.04.2012 | 00:00       | 18h32'17.9" | -11°11'11.3" | 2.489 aE  | 2.037 aE | 104.8° | 271° | -14° | 11.0/ | 01:30 | 06:35 | +28°  | 11:36 | 04:51 | +24° | SCT |
| Sa 14.04.2012 | 00:00       | 18h32'57.4" | -11° 6'50.9" | 2.487 aE  | 2.022 aE | 105.6° | 271° | -14° | 11.0/ | 01:26 | 06:32 | +28°  | 11:33 | 04:49 | +25° | SCT |
| So 15.04.2012 | 00:00       | 18h33'35.7" | -11° 2'29.7" | 2.485 aE  | 2.008 aE | 106.4° | 272° | -13° | 11.0/ | 01:23 | 06:29 | +29°  | 11:30 | 04:46 | +25° | SCT |
| Mo 16.04.2012 | 00:00       | 18h34'12.7" | -10°58' 7.8" | 2.483 aE  | 1.994 aE | 107.2° | 272° | -12° | 10.9/ | 01:19 | 06:25 | +29°  | 11:27 | 04:43 | +25° | SCT |
| Di 17.04.2012 | 00:00       | 18h34'48.3" | -10°53'45.4" | 2.480 aE  | 1.980 aE | 108.0° | 273° | -12° | 10.9/ | 01:15 | 06:22 | +29°  | 11:24 | 04:40 | +25° | SCT |
| Mi 18.04.2012 | 00:00       | 18h35'22.5" | -10°49'22.6" | 2.478 aE  | 1.966 aE | 108.8° | 273° | -11° | 10.9/ | 01:11 | 06:19 | +29°  | 11:21 | 04:38 | +25° | SCT |
| Do 19.04.2012 | 00:00       | 18h35'55.4" | -10°44'59.5" | 2.476 aE  | 1.952 aE | 109.6° | 274° | -11° | 10.9/ | 01:08 | 06:15 | +29°  | 11:18 | 04:35 | +25° | SCT |
| Fr 20.04.2012 | 00:00       | 18h36'26.9" | -10°40'36.4" | 2.474 aE  | 1.938 aE | 110.4° | 275° | -10° | 10.9/ | 01:04 | 06:12 | +29°  | 11:15 | 04:32 | +25° | SCT |
| Sa 21.04.2012 | 00:00       | 18h36'56.9" | -10°36'13.3" | 2.472 aE  | 1.924 aE | 111.2° | 275° | -9°  | 10.8/ | 01:00 | 06:08 | +29°  | 11:12 | 04:29 | +25° | SCT |
| So 22.04.2012 | 00:00       | 18h37'25.5" | -10°31'50.4" | 2.470 aE  | 1.910 aE | 112.0° | 276° | -9°  | 10.8/ | 00:56 | 06:05 | +29°  | 11:08 | 04:27 | +25° | SCT |
| Mo 23.04.2012 | 00:00       | 18h37'52.7" | -10°27'28.0" | 2.468 aE  | 1.897 aE | 112.8° | 277° | -8°  | 10.8/ | 00:52 | 06:01 | +29°  | 11:05 | 04:24 | +26° | SCT |
| Di 24.04.2012 | 00:00       | 18h38'18.4" | -10°23' 6.0" | 2.465 aE  | 1.883 aE | 113.7° | 277° | -8°  | 10.8/ | 00:48 | 05:58 | +29°  | 11:02 | 04:21 | +26° | SCT |
| Mi 25.04.2012 | 00:00       | 18h38'42.6" | -10°18'44.7" | 2.463 aE  | 1.869 aE | 114.5° | 278° | -7°  | 10.8/ | 00:44 | 05:54 | +29°  | 10:59 | 04:18 | +26° | SCT |
| Do 26.04.2012 | 00:00       | 18h39' 5.3" | -10°14'24.3" | 2.461 aE  | 1.856 aE | 115.3° | 278° | -6°  | 10.7/ | 00:40 | 05:51 | +29°  | 10:56 | 04:15 | +26° | SCT |
| Fr 27.04.2012 | 00:00       | 18h39'26.5" | -10°10' 4.9" | 2.459 aE  | 1.843 aE | 116.2° | 279° | -6°  | 10.7/ | 00:36 | 05:47 | +29°  | 10:52 | 04:13 | +26° | SCT |
| Sa 28.04.2012 | 00:00       | 18h39'46.2" | -10° 5'46.8" | 2.457 aE  | 1.829 aE | 117.0° | 280° | -5°  | 10.7/ | 00:32 | 05:44 | +29°  | 10:49 | 04:10 | +26° | SCT |
| So 29.04.2012 | 00:00       | 18h40' 4.3" | -10° 1'29.9" | 2.454 aE  | 1.816 aE | 117.9° | 280° | -5°  | 10.7/ | 00:28 | 05:40 | +30°  | 10:46 | 04:07 | +26° | SCT |

# Ephemeride für den Kleinplaneten (18) Melpomene

Alle Zeiten gelten für den Standort Boden (50.5° N, 7.9° O)

Die TOpt bezieht sich auf eine Sonnenhöhe von -16°

| Datum         | RA (2000.0) | D (2000.0)  | r            | Entferng. | Elong.   | Azim   | Höhe | Hell | Aufg. | Kulm. | KHöh  | Untg. | TOpt  | TOptH | Stb. |     |
|---------------|-------------|-------------|--------------|-----------|----------|--------|------|------|-------|-------|-------|-------|-------|-------|------|-----|
| Mo 30.04.2012 | 00:00       | 18h40'20.8" | - 9°57'14.6" | 2.452 aE  | 1.803 aE | 118.8° | 281° | -4°  | 10.6/ | 00:24 | 05:36 | +30°  | 10:42 | 04:04 | +26° | SCT |
| Di 01.05.2012 | 00:00       | 18h40'35.8" | - 9°53' 1.0" | 2.450 aE  | 1.790 aE | 119.6° | 282° | -3°  | 10.6/ | 00:20 | 05:33 | +30°  | 10:39 | 04:01 | +27° | SCT |
| Mi 02.05.2012 | 00:00       | 18h40'49.2" | - 9°48'49.2" | 2.448 aE  | 1.777 aE | 120.5° | 282° | -3°  | 10.6/ | 00:16 | 05:29 | +30°  | 10:36 | 03:58 | +27° | SCT |
| Do 03.05.2012 | 00:00       | 18h41' 1.0" | - 9°44'39.5" | 2.446 aE  | 1.765 aE | 121.4° | 283° | -2°  | 10.6/ | 00:12 | 05:25 | +30°  | 10:32 | 03:56 | +27° | SCT |
| Fr 04.05.2012 | 00:00       | 18h41'11.1" | - 9°40'32.0" | 2.443 aE  | 1.752 aE | 122.2° | 284° | -1°  | 10.6/ | 00:08 | 05:21 | +30°  | 10:29 | 03:53 | +27° | SCT |
| Sa 05.05.2012 | 00:00       | 18h41'19.6" | - 9°36'26.9" | 2.441 aE  | 1.739 aE | 123.1° | 284° | -1°  | 10.5/ | 00:04 | 05:18 | +30°  | 10:25 | 03:50 | +27° | SCT |
| So 06.05.2012 | 00:00       | 18h41'26.5" | - 9°32'24.3" | 2.439 aE  | 1.727 aE | 124.0° | 285° | -0°  | 10.5/ | 00:00 | 05:14 | +30°  | 10:22 | 03:47 | +27° | SCT |
| Mo 07.05.2012 | 00:00       | 18h41'31.7" | - 9°28'24.6" | 2.437 aE  | 1.715 aE | 124.9° | 286° | 1°   | 10.5/ | 23:50 | 05:10 | +30°  | 10:18 | 03:44 | +27° | SCT |
| Di 08.05.2012 | 00:00       | 18h41'35.3" | - 9°24'27.8" | 2.434 aE  | 1.702 aE | 125.8° | 286° | 1°   | 10.5/ | 23:46 | 05:06 | +30°  | 10:15 | 03:41 | +27° | SCT |
| Mi 09.05.2012 | 00:00       | 18h41'37.1" | - 9°20'34.1" | 2.432 aE  | 1.690 aE | 126.7° | 287° | 2°   | 10.4/ | 23:42 | 05:02 | +30°  | 10:11 | 03:38 | +28° | SCT |
| Do 10.05.2012 | 00:00       | 18h41'37.3" | - 9°16'43.8" | 2.430 aE  | 1.678 aE | 127.6° | 288° | 3°   | 10.4/ | 23:38 | 04:58 | +30°  | 10:08 | 03:35 | +28° | SCT |
| Fr 11.05.2012 | 00:00       | 18h41'35.7" | - 9°12'57.1" | 2.428 aE  | 1.667 aE | 128.5° | 289° | 3°   | 10.4/ | 23:33 | 04:54 | +30°  | 10:04 | 03:33 | +28° | SCT |
| Sa 12.05.2012 | 00:00       | 18h41'32.4" | - 9° 9'14.1" | 2.425 aE  | 1.655 aE | 129.4° | 289° | 4°   | 10.4/ | 23:29 | 04:50 | +30°  | 10:01 | 03:30 | +28° | SCT |
| So 13.05.2012 | 00:00       | 18h41'27.3" | - 9° 5'35.2" | 2.423 aE  | 1.643 aE | 130.3° | 290° | 4°   | 10.3/ | 23:25 | 04:46 | +30°  | 09:57 | 03:27 | +28° | SCT |
| Mo 14.05.2012 | 00:00       | 18h41'20.5" | - 9° 2' 0.4" | 2.421 aE  | 1.632 aE | 131.3° | 291° | 5°   | 10.3/ | 23:20 | 04:42 | +31°  | 09:53 | 03:24 | +28° | SCT |
| Di 15.05.2012 | 00:00       | 18h41'11.9" | - 8°58'30.2" | 2.419 aE  | 1.621 aE | 132.2° | 292° | 6°   | 10.3/ | 23:16 | 04:38 | +31°  | 09:49 | 03:21 | +28° | SCT |
| Mi 16.05.2012 | 00:00       | 18h41' 1.6" | - 8°55' 4.6" | 2.416 aE  | 1.610 aE | 133.1° | 292° | 6°   | 10.3/ | 23:11 | 04:34 | +31°  | 09:46 | 03:18 | +28° | SCT |
| Do 17.05.2012 | 00:00       | 18h40'49.4" | - 8°51'43.9" | 2.414 aE  | 1.599 aE | 134.1° | 293° | 7°   | 10.2/ | 23:07 | 04:30 | +31°  | 09:42 | 03:15 | +29° | SCT |
| Fr 18.05.2012 | 00:00       | 18h40'35.5" | - 8°48'28.4" | 2.412 aE  | 1.588 aE | 135.0° | 294° | 8°   | 10.2/ | 23:02 | 04:26 | +31°  | 09:38 | 03:12 | +29° | SCT |
| Sa 19.05.2012 | 00:00       | 18h40'19.9" | - 8°45'18.2" | 2.409 aE  | 1.577 aE | 135.9° | 295° | 8°   | 10.2/ | 22:58 | 04:21 | +31°  | 09:34 | 03:09 | +29° | SCT |
| So 20.05.2012 | 00:00       | 18h40' 2.4" | - 8°42'13.6" | 2.407 aE  | 1.567 aE | 136.9° | 296° | 9°   | 10.2/ | 22:53 | 04:17 | +31°  | 09:30 | 03:07 | +29° | SCT |
| Mo 21.05.2012 | 00:00       | 18h39'43.2" | - 8°39'14.8" | 2.405 aE  | 1.557 aE | 137.9° | 297° | 10°  | 10.2/ | 22:49 | 04:13 | +31°  | 09:26 | 03:04 | +29° | SCT |
| Di 22.05.2012 | 00:00       | 18h39'22.2" | - 8°36'22.0" | 2.403 aE  | 1.546 aE | 138.8° | 297° | 10°  | 10.1/ | 22:44 | 04:09 | +31°  | 09:22 | 03:01 | +29° | SCT |
| Mi 23.05.2012 | 00:00       | 18h38'59.4" | - 8°33'35.5" | 2.400 aE  | 1.536 aE | 139.8° | 298° | 11°  | 10.1/ | 22:39 | 04:04 | +31°  | 09:18 | 02:58 | +29° | SCT |
| Do 24.05.2012 | 00:00       | 18h38'34.9" | - 8°30'55.5" | 2.398 aE  | 1.527 aE | 140.7° | 299° | 12°  | 10.1/ | 22:35 | 04:00 | +31°  | 09:14 | 02:55 | +29° | SCT |
| Fr 25.05.2012 | 00:00       | 18h38' 8.7" | - 8°28'22.1" | 2.396 aE  | 1.517 aE | 141.7° | 300° | 12°  | 10.0/ | 22:30 | 03:56 | +31°  | 09:09 | 02:52 | +30° | SCT |
| Sa 26.05.2012 | 00:00       | 18h37'40.7" | - 8°25'55.7" | 2.393 aE  | 1.508 aE | 142.7° | 301° | 13°  | 10.0/ | 22:26 | 03:51 | +31°  | 09:05 | 02:49 | +30° | SCT |
| So 27.05.2012 | 00:00       | 18h37'11.0" | - 8°23'36.3" | 2.391 aE  | 1.498 aE | 143.6° | 302° | 14°  | 10.0/ | 22:21 | 03:47 | +31°  | 09:01 | 02:46 | +30° | SCT |
| Mo 28.05.2012 | 00:00       | 18h36'39.6" | - 8°21'24.3" | 2.389 aE  | 1.489 aE | 144.6° | 303° | 14°  | 10.0/ | 22:16 | 03:42 | +31°  | 08:57 | 02:43 | +30° | SCT |
| Di 29.05.2012 | 00:00       | 18h36' 6.6" | - 8°19'19.8" | 2.386 aE  | 1.481 aE | 145.5° | 304° | 15°  | 9.9/  | 22:12 | 03:38 | +31°  | 08:52 | 02:40 | +30° | SCT |
| Mi 30.05.2012 | 00:00       | 18h35'31.9" | - 8°17'23.0" | 2.384 aE  | 1.472 aE | 146.5° | 305° | 15°  | 9.9/  | 22:07 | 03:33 | +31°  | 08:48 | 02:38 | +30° | SCT |
| Do 31.05.2012 | 00:00       | 18h34'55.6" | - 8°15'34.1" | 2.382 aE  | 1.463 aE | 147.5° | 306° | 16°  | 9.9/  | 22:02 | 03:29 | +31°  | 08:43 | 02:35 | +30° | SCT |
| Fr 01.06.2012 | 00:00       | 18h34'17.7" | - 8°13'53.3" | 2.379 aE  | 1.455 aE | 148.4° | 307° | 17°  | 9.9/  | 21:58 | 03:24 | +31°  | 08:39 | 02:32 | +30° | SCT |
| Sa 02.06.2012 | 00:00       | 18h33'38.3" | - 8°12'20.8" | 2.377 aE  | 1.447 aE | 149.4° | 308° | 17°  | 9.8/  | 21:53 | 03:20 | +31°  | 08:34 | 02:29 | +30° | SCT |
| So 03.06.2012 | 00:00       | 18h32'57.3" | - 8°10'56.7" | 2.374 aE  | 1.439 aE | 150.3° | 309° | 18°  | 9.8/  | 21:48 | 03:15 | +31°  | 08:30 | 02:26 | +30° | SCT |
| Mo 04.06.2012 | 00:00       | 18h32'14.7" | - 8° 9'41.2" | 2.372 aE  | 1.432 aE | 151.3° | 310° | 18°  | 9.8/  | 21:44 | 03:10 | +31°  | 08:25 | 02:23 | +31° | SCT |
| Di 05.06.2012 | 00:00       | 18h31'30.7" | - 8° 8'34.6" | 2.370 aE  | 1.424 aE | 152.2° | 311° | 19°  | 9.8/  | 21:39 | 03:06 | +31°  | 08:21 | 02:20 | +31° | SCT |
| Mi 06.06.2012 | 00:00       | 18h30'45.3" | - 8° 7'37.0" | 2.367 aE  | 1.417 aE | 153.2° | 312° | 20°  | 9.7/  | 21:34 | 03:01 | +31°  | 08:16 | 02:18 | +31° | SCT |
| Do 07.06.2012 | 00:00       | 18h29'58.5" | - 8° 6'48.5" | 2.365 aE  | 1.410 aE | 154.1° | 313° | 20°  | 9.7/  | 21:29 | 02:56 | +31°  | 08:12 | 02:15 | +31° | SCT |
| Fr 08.06.2012 | 00:00       | 18h29'10.2" | - 8° 6' 9.3" | 2.363 aE  | 1.403 aE | 155.0° | 314° | 21°  | 9.7/  | 21:25 | 02:52 | +31°  | 08:07 | 02:12 | +31° | SCT |

# Ephemeride für den Kleinplaneten (18) Melpomene

Alle Zeiten gelten für den Standort Boden (50.5° N, 7.9° O)

Die TOpt bezieht sich auf eine Sonnenhöhe von -16°

| Datum         | RA (2000.0) | D (2000.0)  | r            | Entferng. | Elong.   | Azim   | Höhe | Hell | Aufg. | Kulm. | KHöh       | Untg. | TOpt       | TOptH | Stb. |
|---------------|-------------|-------------|--------------|-----------|----------|--------|------|------|-------|-------|------------|-------|------------|-------|------|
| Sa 09.06.2012 | 00:00       | 18h28'20.7" | - 8° 5'39.7" | 2.360 aE  | 1.397 aE | 155.9° | 315° | 21°  | 9.7/  | 21:20 | 02:47 +31° | 08:02 | 02:09 +31° | SCT   |      |
| So 10.06.2012 | 00:00       | 18h27'29.8" | - 8° 5'19.7" | 2.358 aE  | 1.391 aE | 156.8° | 316° | 22°  | 9.6/  | 21:15 | 02:42 +31° | 07:58 | 02:06 +31° | SCT   |      |
| Mo 11.06.2012 | 00:00       | 18h26'37.7" | - 8° 5' 9.5" | 2.355 aE  | 1.385 aE | 157.6° | 317° | 22°  | 9.6/  | 21:10 | 02:37 +31° | 07:53 | 02:04 +31° | SCT   |      |
| Di 12.06.2012 | 00:00       | 18h25'44.4" | - 8° 5' 9.2" | 2.353 aE  | 1.379 aE | 158.5° | 319° | 23°  | 9.6/  | 21:05 | 02:32 +31° | 07:48 | 02:01 +31° | SCT   |      |
| Mi 13.06.2012 | 00:00       | 18h24'50.0" | - 8° 5'19.0" | 2.351 aE  | 1.373 aE | 159.3° | 320° | 23°  | 9.6/  | 21:00 | 02:28 +31° | 07:43 | 01:59 +31° | SCT   |      |
| Do 14.06.2012 | 00:00       | 18h23'54.5" | - 8° 5'39.0" | 2.348 aE  | 1.368 aE | 160.1° | 321° | 24°  | 9.6/  | 20:55 | 02:23 +31° | 07:38 | 01:56 +31° | SCT   |      |
| Fr 15.06.2012 | 00:00       | 18h22'58.0" | - 8° 6' 9.3" | 2.346 aE  | 1.363 aE | 160.8° | 322° | 24°  | 9.5/  | 20:51 | 02:18 +31° | 07:34 | 01:54 +31° | SCT   |      |
| Sa 16.06.2012 | 00:00       | 18h22' 0.5" | - 8° 6'50.0" | 2.343 aE  | 1.358 aE | 161.5° | 323° | 25°  | 9.5/  | 20:46 | 02:13 +31° | 07:29 | 01:52 +31° | SCT   |      |
| So 17.06.2012 | 00:00       | 18h21' 2.2" | - 8° 7'41.2" | 2.341 aE  | 1.353 aE | 162.2° | 325° | 25°  | 9.5/  | 20:41 | 02:08 +31° | 07:24 | 01:50 +31° | SCT   |      |
| Mo 18.06.2012 | 00:00       | 18h20' 3.0" | - 8° 8'42.9" | 2.339 aE  | 1.349 aE | 162.8° | 326° | 26°  | 9.5/  | 20:36 | 02:03 +31° | 07:19 | 01:48 +31° | SCT   |      |
| Di 19.06.2012 | 00:00       | 18h19' 3.0" | - 8° 9'55.2" | 2.336 aE  | 1.345 aE | 163.3° | 327° | 26°  | 9.5/  | 20:31 | 01:58 +31° | 07:13 | 01:47 +31° | SCT   |      |
| Mi 20.06.2012 | 00:00       | 18h18' 2.4" | - 8°11'18.1" | 2.334 aE  | 1.341 aE | 163.8° | 329° | 26°  | 9.4/  | 20:26 | 01:53 +31° | 07:08 | 01:46 +31° | SCT   |      |
| Do 21.06.2012 | 00:00       | 18h17' 1.2" | - 8°12'51.6" | 2.331 aE  | 1.337 aE | 164.2° | 330° | 27°  | 9.4/  | 20:21 | 01:48 +31° | 07:03 | 01:46 +31° | SCT   |      |
| Fr 22.06.2012 | 00:00       | 18h15'59.4" | - 8°14'35.7" | 2.329 aE  | 1.334 aE | 164.5° | 331° | 27°  | 9.4/  | 20:17 | 01:43 +31° | 06:58 | 01:42 +31° | SCT   |      |
| Sa 23.06.2012 | 00:00       | 18h14'57.2" | - 8°16'30.5" | 2.326 aE  | 1.330 aE | 164.7° | 333° | 28°  | 9.4/  | 20:12 | 01:38 +31° | 06:53 | 01:37 +31° | SCT   |      |
| So 24.06.2012 | 00:00       | 18h13'54.6" | - 8°18'35.9" | 2.324 aE  | 1.328 aE | 164.9° | 334° | 28°  | 9.4/  | 20:07 | 01:33 +31° | 06:48 | 01:32 +31° | SCT   |      |
| Mo 25.06.2012 | 00:00       | 18h12'51.8" | - 8°20'51.9" | 2.322 aE  | 1.325 aE | 164.9° | 335° | 28°  | 9.4/  | 20:03 | 01:28 +31° | 06:42 | 01:27 +31° | SCT   |      |
| Di 26.06.2012 | 00:00       | 18h11'48.7" | - 8°23'18.4" | 2.319 aE  | 1.322 aE | 164.9° | 337° | 28°  | 9.4/  | 19:58 | 01:23 +31° | 06:37 | 01:22 +31° | SCT   |      |
| Mi 27.06.2012 | 00:00       | 18h10'45.5" | - 8°25'55.4" | 2.317 aE  | 1.320 aE | 164.8° | 338° | 29°  | 9.4/  | 19:53 | 01:19 +31° | 06:32 | 01:18 +31° | SCT   |      |
| Do 28.06.2012 | 00:00       | 18h 9'42.3" | - 8°28'42.7" | 2.314 aE  | 1.318 aE | 164.5° | 339° | 29°  | 9.4/  | 19:49 | 01:14 +31° | 06:27 | 01:13 +31° | SCT   |      |
| Fr 29.06.2012 | 00:00       | 18h 8'39.1" | - 8°31'40.3" | 2.312 aE  | 1.317 aE | 164.2° | 341° | 29°  | 9.4\  | 19:44 | 01:09 +31° | 06:22 | 01:08 +31° | SER   |      |
| Sa 30.06.2012 | 00:00       | 18h 7'36.0" | - 8°34'48.1" | 2.309 aE  | 1.315 aE | 163.8° | 342° | 29°  | 9.4\  | 19:39 | 01:04 +31° | 06:16 | 01:03 +31° | SER   |      |
| So 01.07.2012 | 00:00       | 18h 6'33.1" | - 8°38' 6.0" | 2.307 aE  | 1.314 aE | 163.4° | 344° | 30°  | 9.4\  | 19:35 | 00:59 +31° | 06:11 | 00:58 +31° | SER   |      |
| Mo 02.07.2012 | 00:00       | 18h 5'30.5" | - 8°41'33.8" | 2.304 aE  | 1.313 aE | 162.8° | 345° | 30°  | 9.4\  | 19:30 | 00:54 +31° | 06:06 | 00:54 +31° | SER   |      |
| Di 03.07.2012 | 00:00       | 18h 4'28.2" | - 8°45'11.4" | 2.302 aE  | 1.313 aE | 162.2° | 346° | 30°  | 9.4\  | 19:25 | 00:49 +31° | 06:01 | 00:51 +31° | SER   |      |
| Mi 04.07.2012 | 00:00       | 18h 3'26.4" | - 8°48'58.7" | 2.299 aE  | 1.312 aE | 161.6° | 348° | 30°  | 9.4\  | 19:21 | 00:44 +31° | 05:56 | 00:49 +31° | SER   |      |
| Do 05.07.2012 | 00:00       | 18h 2'25.0" | - 8°52'55.6" | 2.297 aE  | 1.312 aE | 160.9° | 349° | 30°  | 9.4\  | 19:16 | 00:39 +31° | 05:50 | 00:46 +31° | SER   |      |
| Fr 06.07.2012 | 00:00       | 18h 1'24.2" | - 8°57' 1.9" | 2.294 aE  | 1.312 aE | 160.1° | 351° | 30°  | 9.4\  | 19:11 | 00:34 +31° | 05:45 | 00:43 +31° | SER   |      |
| Sa 07.07.2012 | 00:00       | 18h 0'24.1" | - 9° 1'17.4" | 2.292 aE  | 1.312 aE | 159.4° | 352° | 30°  | 9.4\  | 19:07 | 00:29 +31° | 05:40 | 00:40 +30° | SER   |      |
| So 08.07.2012 | 00:00       | 17h59'24.6" | - 9° 5'42.0" | 2.289 aE  | 1.313 aE | 158.5° | 353° | 30°  | 9.4\  | 19:02 | 00:24 +30° | 05:35 | 00:37 +30° | SER   |      |
| Mo 09.07.2012 | 00:00       | 17h58'26.0" | - 9°10'15.5" | 2.287 aE  | 1.314 aE | 157.7° | 355° | 30°  | 9.5\  | 18:58 | 00:19 +30° | 05:29 | 00:35 +30° | SER   |      |
| Di 10.07.2012 | 00:00       | 17h57'28.2" | - 9°14'57.8" | 2.285 aE  | 1.315 aE | 156.8° | 356° | 30°  | 9.5\  | 18:53 | 00:14 +30° | 05:24 | 00:32 +30° | SER   |      |
| Mi 11.07.2012 | 00:00       | 17h56'31.3" | - 9°19'48.6" | 2.282 aE  | 1.316 aE | 155.9° | 358° | 30°  | 9.5\  | 18:49 | 00:09 +30° | 05:19 | 00:29 +30° | SER   |      |
| Do 12.07.2012 | 00:00       | 17h55'35.4" | - 9°24'47.7" | 2.280 aE  | 1.317 aE | 155.0° | 359° | 30°  | 9.5\  | 18:44 | 00:04 +30° | 05:14 | 00:26 +30° | SER   |      |
| Fr 13.07.2012 | 00:00       | 17h54'40.6" | - 9°29'55.0" | 2.277 aE  | 1.319 aE | 154.0° | 0°   | 30°  | 9.5\  | 18:40 | 23:55 +30° | 05:08 | 00:23 +30° | SER   |      |
| Sa 14.07.2012 | 00:00       | 17h53'47.0" | - 9°35'10.2" | 2.275 aE  | 1.321 aE | 153.1° | 2°   | 30°  | 9.5\  | 18:35 | 23:50 +30° | 05:03 | 00:20 +30° | SER   |      |
| So 15.07.2012 | 00:00       | 17h52'54.6" | - 9°40'33.1" | 2.272 aE  | 1.323 aE | 152.1° | 3°   | 30°  | 9.5\  | 18:31 | 23:45 +30° | 04:58 | 00:17 +30° | SER   |      |
| Mo 16.07.2012 | 00:00       | 17h52' 3.4" | - 9°46' 3.4" | 2.270 aE  | 1.326 aE | 151.2° | 5°   | 30°  | 9.6\  | 18:27 | 23:40 +30° | 04:52 | 00:14 +29° | OPH   |      |
| Di 17.07.2012 | 00:00       | 17h51'13.6" | - 9°51'40.9" | 2.267 aE  | 1.328 aE | 150.2° | 6°   | 29°  | 9.6\  | 18:23 | 23:36 +30° | 04:47 | 00:11 +29° | OPH   |      |
| Mi 18.07.2012 | 00:00       | 17h50'25.1" | - 9°57'25.5" | 2.265 aE  | 1.331 aE | 149.2° | 7°   | 29°  | 9.6\  | 18:18 | 23:31 +29° | 04:42 | 00:09 +29° | OPH   |      |

# Ephemeride für den Kleinplaneten (18) Melpomene

Alle Zeiten gelten für den Standort Boden (50.5° N, 7.9° O)

Die TOpt bezieht sich auf eine Sonnenhöhe von -16°

| Datum         | RA (2000.0) | D (2000.0)  | r            | Entferng. | Elong.   | Azim   | Höhe | Hell | Aufg. | Kulm. | KHöh  | Untg. | TOpt  | TOptH | Stb. |     |
|---------------|-------------|-------------|--------------|-----------|----------|--------|------|------|-------|-------|-------|-------|-------|-------|------|-----|
| Do 19.07.2012 | 00:00       | 17h49'38.2" | -10° 3'16.7" | 2.262 aE  | 1.334 aE | 148.2° | 9°   | 29°  | 9.6\  | 18:14 | 23:26 | +29°  | 04:37 | 00:06 | +29° | SER |
| Fr 20.07.2012 | 00:00       | 17h48'52.7" | -10° 9'14.4" | 2.260 aE  | 1.337 aE | 147.2° | 10°  | 29°  | 9.6\  | 18:10 | 23:22 | +29°  | 04:31 | 00:03 | +29° | SER |
| Sa 21.07.2012 | 00:00       | 17h48' 8.8" | -10°15'18.4" | 2.257 aE  | 1.341 aE | 146.2° | 11°  | 29°  | 9.6\  | 18:06 | 23:17 | +29°  | 04:26 | 00:00 | +29° | SER |
| So 22.07.2012 | 00:00       | 17h47'26.5" | -10°21'28.3" | 2.254 aE  | 1.344 aE | 145.2° | 12°  | 28°  | 9.6\  | 18:02 | 23:12 | +29°  | 04:21 | 00:00 | +28° | SER |
| Mo 23.07.2012 | 00:00       | 17h46'45.9" | -10°27'43.9" | 2.252 aE  | 1.348 aE | 144.2° | 14°  | 28°  | 9.7\  | 17:58 | 23:08 | +29°  | 04:16 | 23:51 | +28° | SER |
| Di 24.07.2012 | 00:00       | 17h46' 6.9" | -10°34' 4.9" | 2.249 aE  | 1.352 aE | 143.2° | 15°  | 28°  | 9.7\  | 17:54 | 23:03 | +29°  | 04:11 | 23:48 | +28° | SER |
| Mi 25.07.2012 | 00:00       | 17h45'29.8" | -10°40'31.2" | 2.247 aE  | 1.356 aE | 142.2° | 16°  | 28°  | 9.7\  | 17:50 | 22:59 | +29°  | 04:06 | 23:45 | +28° | SER |
| Do 26.07.2012 | 00:00       | 17h44'54.4" | -10°47' 2.3" | 2.244 aE  | 1.361 aE | 141.2° | 17°  | 27°  | 9.7\  | 17:46 | 22:54 | +29°  | 04:01 | 23:42 | +28° | SER |
| Fr 27.07.2012 | 00:00       | 17h44'20.8" | -10°53'38.1" | 2.242 aE  | 1.365 aE | 140.2° | 19°  | 27°  | 9.7\  | 17:43 | 22:50 | +29°  | 03:56 | 23:39 | +28° | SER |
| Sa 28.07.2012 | 00:00       | 17h43'49.0" | -11° 0'18.3" | 2.239 aE  | 1.370 aE | 139.2° | 20°  | 27°  | 9.7\  | 17:39 | 22:45 | +28°  | 03:51 | 23:37 | +27° | SER |
| So 29.07.2012 | 00:00       | 17h43'19.2" | -11° 7' 2.6" | 2.237 aE  | 1.375 aE | 138.3° | 21°  | 26°  | 9.8\  | 17:35 | 22:41 | +28°  | 03:46 | 23:34 | +27° | SER |
| Mo 30.07.2012 | 00:00       | 17h42'51.2" | -11°13'50.8" | 2.234 aE  | 1.380 aE | 137.3° | 22°  | 26°  | 9.8\  | 17:31 | 22:37 | +28°  | 03:41 | 23:31 | +27° | SER |
| Di 31.07.2012 | 00:00       | 17h42'25.1" | -11°20'42.7" | 2.232 aE  | 1.385 aE | 136.3° | 23°  | 25°  | 9.8\  | 17:27 | 22:32 | +28°  | 03:36 | 23:28 | +27° | SER |
| Mi 01.08.2012 | 00:00       | 17h42' 1.0" | -11°27'38.0" | 2.229 aE  | 1.390 aE | 135.3° | 24°  | 25°  | 9.8\  | 17:24 | 22:28 | +28°  | 03:31 | 23:25 | +27° | SER |
| Do 02.08.2012 | 00:00       | 17h41'38.8" | -11°34'36.6" | 2.227 aE  | 1.396 aE | 134.3° | 25°  | 25°  | 9.8\  | 17:20 | 22:24 | +28°  | 03:26 | 23:22 | +26° | SER |
| Fr 03.08.2012 | 00:00       | 17h41'18.5" | -11°41'38.0" | 2.224 aE  | 1.402 aE | 133.4° | 26°  | 24°  | 9.8\  | 17:16 | 22:19 | +28°  | 03:21 | 23:19 | +26° | SER |
| Sa 04.08.2012 | 00:00       | 17h41' 0.3" | -11°48'42.3" | 2.222 aE  | 1.408 aE | 132.4° | 27°  | 24°  | 9.9\  | 17:13 | 22:15 | +28°  | 03:17 | 23:16 | +26° | SER |
| So 05.08.2012 | 00:00       | 17h40'44.0" | -11°55'49.0" | 2.219 aE  | 1.414 aE | 131.4° | 28°  | 23°  | 9.9\  | 17:09 | 22:11 | +27°  | 03:12 | 23:13 | +26° | SER |
| Mo 06.08.2012 | 00:00       | 17h40'29.7" | -12° 2'58.1" | 2.217 aE  | 1.420 aE | 130.5° | 29°  | 23°  | 9.9\  | 17:06 | 22:07 | +27°  | 03:07 | 23:11 | +26° | SER |
| Di 07.08.2012 | 00:00       | 17h40'17.5" | -12°10' 9.3" | 2.214 aE  | 1.426 aE | 129.5° | 30°  | 23°  | 9.9\  | 17:02 | 22:03 | +27°  | 03:02 | 23:08 | +26° | SER |
| Mi 08.08.2012 | 00:00       | 17h40' 7.2" | -12°17'22.3" | 2.212 aE  | 1.432 aE | 128.6° | 31°  | 22°  | 9.9\  | 16:59 | 21:59 | +27°  | 02:57 | 23:05 | +25° | SER |
| Do 09.08.2012 | 00:00       | 17h39'59.0" | -12°24'37.0" | 2.209 aE  | 1.439 aE | 127.6° | 32°  | 22°  | 9.9\  | 16:55 | 21:55 | +27°  | 02:53 | 23:02 | +25° | SER |
| Fr 10.08.2012 | 00:00       | 17h39'52.8" | -12°31'53.2" | 2.206 aE  | 1.446 aE | 126.7° | 33°  | 21°  | 10.0\ | 16:52 | 21:51 | +27°  | 02:48 | 22:59 | +25° | SER |
| Sa 11.08.2012 | 00:00       | 17h39'48.6" | -12°39'10.6" | 2.204 aE  | 1.452 aE | 125.8° | 34°  | 21°  | 10.0\ | 16:48 | 21:47 | +27°  | 02:43 | 22:56 | +25° | SER |
| So 12.08.2012 | 00:00       | 17h39'46.5" | -12°46'29.0" | 2.201 aE  | 1.459 aE | 124.9° | 35°  | 20°  | 10.0\ | 16:45 | 21:43 | +27°  | 02:39 | 22:53 | +25° | SER |
| Mo 13.08.2012 | 00:00       | 17h39'46.4" | -12°53'48.3" | 2.199 aE  | 1.466 aE | 123.9° | 36°  | 20°  | 10.0\ | 16:42 | 21:39 | +27°  | 02:34 | 22:51 | +25° | SER |
| Di 14.08.2012 | 00:00       | 17h39'48.3" | -13° 1' 8.2" | 2.196 aE  | 1.473 aE | 123.0° | 37°  | 19°  | 10.0\ | 16:39 | 21:35 | +26°  | 02:29 | 22:48 | +24° | SER |
| Mi 15.08.2012 | 00:00       | 17h39'52.3" | -13° 8'28.5" | 2.194 aE  | 1.481 aE | 122.1° | 38°  | 19°  | 10.0\ | 16:35 | 21:31 | +26°  | 02:25 | 22:45 | +24° | SER |
| Do 16.08.2012 | 00:00       | 17h39'58.4" | -13°15'49.0" | 2.191 aE  | 1.488 aE | 121.2° | 39°  | 18°  | 10.0\ | 16:32 | 21:27 | +26°  | 02:20 | 22:42 | +24° | SER |
| Fr 17.08.2012 | 00:00       | 17h40' 6.4" | -13°23' 9.6" | 2.189 aE  | 1.495 aE | 120.3° | 40°  | 18°  | 10.1\ | 16:29 | 21:24 | +26°  | 02:16 | 22:39 | +24° | SER |
| Sa 18.08.2012 | 00:00       | 17h40'16.5" | -13°30'29.9" | 2.186 aE  | 1.503 aE | 119.4° | 40°  | 17°  | 10.1\ | 16:26 | 21:20 | +26°  | 02:12 | 22:36 | +24° | SER |
| So 19.08.2012 | 00:00       | 17h40'28.6" | -13°37'50.0" | 2.184 aE  | 1.511 aE | 118.6° | 41°  | 17°  | 10.1\ | 16:23 | 21:16 | +26°  | 02:07 | 22:34 | +23° | SER |
| Mo 20.08.2012 | 00:00       | 17h40'42.8" | -13°45' 9.4" | 2.181 aE  | 1.518 aE | 117.7° | 42°  | 16°  | 10.1\ | 16:20 | 21:12 | +26°  | 02:03 | 22:31 | +23° | SER |
| Di 21.08.2012 | 00:00       | 17h40'58.9" | -13°52'28.2" | 2.179 aE  | 1.526 aE | 116.8° | 43°  | 16°  | 10.1\ | 16:17 | 21:09 | +26°  | 01:59 | 22:28 | +23° | SER |
| Mi 22.08.2012 | 00:00       | 17h41'17.1" | -13°59'46.0" | 2.176 aE  | 1.534 aE | 116.0° | 43°  | 15°  | 10.1\ | 16:14 | 21:05 | +25°  | 01:55 | 22:25 | +23° | SER |
| Do 23.08.2012 | 00:00       | 17h41'37.2" | -14° 7' 2.7" | 2.174 aE  | 1.542 aE | 115.1° | 44°  | 15°  | 10.2\ | 16:11 | 21:02 | +25°  | 01:50 | 22:23 | +23° | SER |
| Fr 24.08.2012 | 00:00       | 17h41'59.3" | -14°14'18.2" | 2.171 aE  | 1.550 aE | 114.3° | 45°  | 14°  | 10.2\ | 16:08 | 20:58 | +25°  | 01:46 | 22:20 | +23° | SER |
| Sa 25.08.2012 | 00:00       | 17h42'23.4" | -14°21'32.3" | 2.168 aE  | 1.558 aE | 113.4° | 46°  | 14°  | 10.2\ | 16:06 | 20:55 | +25°  | 01:42 | 22:17 | +23° | SER |
| So 26.08.2012 | 00:00       | 17h42'49.4" | -14°28'44.7" | 2.166 aE  | 1.566 aE | 112.6° | 46°  | 13°  | 10.2\ | 16:03 | 20:51 | +25°  | 01:38 | 22:14 | +22° | SER |
| Mo 27.08.2012 | 00:00       | 17h43'17.3" | -14°35'55.4" | 2.163 aE  | 1.575 aE | 111.8° | 47°  | 13°  | 10.2\ | 16:00 | 20:48 | +25°  | 01:34 | 22:12 | +22° | SER |

# Ephemeride für den Kleinplaneten (18) Melpomene

Alle Zeiten gelten für den Standort Boden (50.5° N, 7.9° O)

Die TOpt bezieht sich auf eine Sonnenhöhe von -16°

| Datum         | RA (2000.0) | D (2000.0)  | r            | Entferng. | Elong.   | Azim   | Höhe | Hell | Aufg. | Kulm. | KHöh  | Untg. | TOpt  | TOptH | Stb.     |
|---------------|-------------|-------------|--------------|-----------|----------|--------|------|------|-------|-------|-------|-------|-------|-------|----------|
| Di 28.08.2012 | 00:00       | 17h43'47.1" | -14°43' 4.3" | 2.161 aE  | 1.583 aE | 110.9° | 48°  | 12°  | 10.2\ | 15:57 | 20:44 | +25°  | 01:30 | 22:09 | +22° SER |
| Mi 29.08.2012 | 00:00       | 17h44'18.7" | -14°50'11.0" | 2.158 aE  | 1.591 aE | 110.1° | 48°  | 12°  | 10.2\ | 15:55 | 20:41 | +25°  | 01:26 | 22:06 | +22° SER |
| Do 30.08.2012 | 00:00       | 17h44'52.3" | -14°57'15.6" | 2.156 aE  | 1.600 aE | 109.3° | 49°  | 11°  | 10.2\ | 15:52 | 20:38 | +24°  | 01:22 | 22:03 | +22° SER |
| Fr 31.08.2012 | 00:00       | 17h45'27.7" | -15° 4'17.9" | 2.153 aE  | 1.608 aE | 108.5° | 50°  | 11°  | 10.3\ | 15:49 | 20:34 | +24°  | 01:18 | 22:01 | +22° SER |
| Sa 01.09.2012 | 00:00       | 17h46' 4.9" | -15°11'17.7" | 2.151 aE  | 1.617 aE | 107.7° | 50°  | 10°  | 10.3\ | 15:47 | 20:31 | +24°  | 01:14 | 21:58 | +21° SER |
| So 02.09.2012 | 00:00       | 17h46'43.9" | -15°18'14.9" | 2.148 aE  | 1.626 aE | 106.9° | 51°  | 10°  | 10.3\ | 15:44 | 20:28 | +24°  | 01:10 | 21:55 | +21° SER |
| Mo 03.09.2012 | 00:00       | 17h47'24.7" | -15°25' 9.3" | 2.146 aE  | 1.634 aE | 106.1° | 52°  | 9°   | 10.3\ | 15:42 | 20:24 | +24°  | 01:06 | 21:53 | +21° SER |
| Di 04.09.2012 | 00:00       | 17h48' 7.2" | -15°32' 0.9" | 2.143 aE  | 1.643 aE | 105.3° | 52°  | 9°   | 10.3\ | 15:39 | 20:21 | +24°  | 01:02 | 21:50 | +21° SER |
| Mi 05.09.2012 | 00:00       | 17h48'51.6" | -15°38'49.5" | 2.141 aE  | 1.652 aE | 104.6° | 53°  | 8°   | 10.3\ | 15:36 | 20:18 | +24°  | 00:58 | 21:47 | +21° SER |
| Do 06.09.2012 | 00:00       | 17h49'37.6" | -15°45'35.0" | 2.138 aE  | 1.660 aE | 103.8° | 53°  | 8°   | 10.3\ | 15:34 | 20:15 | +24°  | 00:54 | 21:45 | +21° SER |
| Fr 07.09.2012 | 00:00       | 17h50'25.4" | -15°52'17.1" | 2.136 aE  | 1.669 aE | 103.0° | 54°  | 7°   | 10.3\ | 15:31 | 20:12 | +24°  | 00:50 | 21:42 | +21° SER |
| Sa 08.09.2012 | 00:00       | 17h51'14.9" | -15°58'55.9" | 2.133 aE  | 1.678 aE | 102.3° | 55°  | 7°   | 10.4\ | 15:29 | 20:09 | +23°  | 00:47 | 21:39 | +20° SER |
| So 09.09.2012 | 00:00       | 17h52' 6.1" | -16° 5'31.1" | 2.131 aE  | 1.687 aE | 101.5° | 55°  | 6°   | 10.4\ | 15:27 | 20:06 | +23°  | 00:43 | 21:37 | +20° SGR |
| Mo 10.09.2012 | 00:00       | 17h52'59.0" | -16°12' 2.7" | 2.128 aE  | 1.696 aE | 100.8° | 56°  | 6°   | 10.4\ | 15:24 | 20:03 | +23°  | 00:39 | 21:34 | +20° SGR |
| Di 11.09.2012 | 00:00       | 17h53'53.5" | -16°18'30.5" | 2.125 aE  | 1.705 aE | 100.0° | 56°  | 5°   | 10.4\ | 15:22 | 20:00 | +23°  | 00:36 | 21:32 | +20° SGR |
| Mi 12.09.2012 | 00:00       | 17h54'49.6" | -16°24'54.3" | 2.123 aE  | 1.714 aE | 99.3°  | 57°  | 5°   | 10.4\ | 15:19 | 19:57 | +23°  | 00:32 | 21:29 | +20° SGR |
| Do 13.09.2012 | 00:00       | 17h55'47.4" | -16°31'14.2" | 2.120 aE  | 1.723 aE | 98.6°  | 57°  | 4°   | 10.4\ | 15:17 | 19:54 | +23°  | 00:28 | 21:26 | +20° SGR |
| Fr 14.09.2012 | 00:00       | 17h56'46.8" | -16°37'29.8" | 2.118 aE  | 1.732 aE | 97.8°  | 58°  | 4°   | 10.4\ | 15:15 | 19:51 | +23°  | 00:25 | 21:24 | +20° SGR |
| Sa 15.09.2012 | 00:00       | 17h57'47.8" | -16°43'41.1" | 2.115 aE  | 1.741 aE | 97.1°  | 58°  | 3°   | 10.4\ | 15:12 | 19:48 | +23°  | 00:21 | 21:21 | +20° SGR |
| So 16.09.2012 | 00:00       | 17h58'50.4" | -16°49'48.1" | 2.113 aE  | 1.750 aE | 96.4°  | 59°  | 3°   | 10.5\ | 15:10 | 19:45 | +23°  | 00:18 | 21:19 | +19° SGR |
| Mo 17.09.2012 | 00:00       | 17h59'54.5" | -16°55'50.5" | 2.110 aE  | 1.759 aE | 95.7°  | 59°  | 2°   | 10.5\ | 15:08 | 19:42 | +23°  | 00:15 | 21:16 | +19° SGR |
| Di 18.09.2012 | 00:00       | 18h 1' 0.2" | -17° 1'48.2" | 2.108 aE  | 1.768 aE | 95.0°  | 60°  | 2°   | 10.5\ | 15:05 | 19:39 | +22°  | 00:11 | 21:14 | +19° SGR |
| Mi 19.09.2012 | 00:00       | 18h 2' 7.3" | -17° 7'41.2" | 2.105 aE  | 1.777 aE | 94.3°  | 60°  | 1°   | 10.5\ | 15:03 | 19:37 | +22°  | 00:08 | 21:11 | +19° SGR |
| Do 20.09.2012 | 00:00       | 18h 3'16.0" | -17°13'29.3" | 2.103 aE  | 1.786 aE | 93.6°  | 61°  | 1°   | 10.5\ | 15:01 | 19:34 | +22°  | 00:05 | 21:09 | +19° SGR |
| Fr 21.09.2012 | 00:00       | 18h 4'26.2" | -17°19'12.4" | 2.100 aE  | 1.795 aE | 92.9°  | 61°  | 0°   | 10.5\ | 14:59 | 19:31 | +22°  | 00:01 | 21:06 | +19° SGR |
| Sa 22.09.2012 | 00:00       | 18h 5'37.8" | -17°24'50.4" | 2.098 aE  | 1.804 aE | 92.2°  | 62°  | 0°   | 10.5\ | 14:56 | 19:28 | +22°  | 23:54 | 21:04 | +19° SGR |
| So 23.09.2012 | 00:00       | 18h 6'50.8" | -17°30'23.2" | 2.095 aE  | 1.813 aE | 91.5°  | 62°  | -0°  | 10.5\ | 14:54 | 19:26 | +22°  | 23:51 | 21:01 | +19° SGR |
| Mo 24.09.2012 | 00:00       | 18h 8' 5.3" | -17°35'50.7" | 2.093 aE  | 1.822 aE | 90.8°  | 63°  | -1°  | 10.5\ | 14:52 | 19:23 | +22°  | 23:48 | 20:59 | +19° SGR |
| Di 25.09.2012 | 00:00       | 18h 9'21.2" | -17°41'12.8" | 2.090 aE  | 1.831 aE | 90.2°  | 63°  | -1°  | 10.5\ | 14:50 | 19:20 | +22°  | 23:44 | 20:57 | +18° SGR |
| Mi 26.09.2012 | 00:00       | 18h10'38.4" | -17°46'29.4" | 2.088 aE  | 1.840 aE | 89.5°  | 64°  | -2°  | 10.5\ | 14:48 | 19:18 | +22°  | 23:41 | 20:54 | +18° SGR |
| Do 27.09.2012 | 00:00       | 18h11'57.0" | -17°51'40.5" | 2.086 aE  | 1.850 aE | 88.8°  | 64°  | -2°  | 10.6\ | 14:46 | 19:15 | +22°  | 23:38 | 20:52 | +18° SGR |
| Fr 28.09.2012 | 00:00       | 18h13'16.9" | -17°56'45.8" | 2.083 aE  | 1.859 aE | 88.2°  | 65°  | -3°  | 10.6\ | 14:43 | 19:12 | +22°  | 23:35 | 20:50 | +18° SGR |
| Sa 29.09.2012 | 00:00       | 18h14'38.2" | -18° 1'45.4" | 2.081 aE  | 1.868 aE | 87.5°  | 65°  | -3°  | 10.6\ | 14:41 | 19:10 | +21°  | 23:32 | 20:47 | +18° SGR |
| So 30.09.2012 | 00:00       | 18h16' 0.7" | -18° 6'39.1" | 2.078 aE  | 1.877 aE | 86.9°  | 66°  | -4°  | 10.6\ | 14:39 | 19:07 | +21°  | 23:29 | 20:45 | +18° SGR |
| Mo 01.10.2012 | 00:00       | 18h17'24.5" | -18°11'26.9" | 2.076 aE  | 1.886 aE | 86.2°  | 66°  | -4°  | 10.6\ | 14:37 | 19:05 | +21°  | 23:26 | 20:43 | +18° SGR |
| Di 02.10.2012 | 00:00       | 18h18'49.6" | -18°16' 8.6" | 2.073 aE  | 1.895 aE | 85.6°  | 66°  | -4°  | 10.6\ | 14:35 | 19:02 | +21°  | 23:23 | 20:40 | +18° SGR |
| Mi 03.10.2012 | 00:00       | 18h20'15.9" | -18°20'44.1" | 2.071 aE  | 1.904 aE | 84.9°  | 67°  | -5°  | 10.6\ | 14:33 | 19:00 | +21°  | 23:20 | 20:38 | +18° SGR |
| Do 04.10.2012 | 00:00       | 18h21'43.5" | -18°25'13.5" | 2.068 aE  | 1.913 aE | 84.3°  | 67°  | -5°  | 10.6\ | 14:31 | 18:57 | +21°  | 23:17 | 20:36 | +18° SGR |
| Fr 05.10.2012 | 00:00       | 18h23'12.2" | -18°29'36.4" | 2.066 aE  | 1.922 aE | 83.6°  | 68°  | -6°  | 10.6\ | 14:29 | 18:55 | +21°  | 23:14 | 20:34 | +18° SGR |
| Sa 06.10.2012 | 00:00       | 18h24'42.2" | -18°33'53.0" | 2.063 aE  | 1.931 aE | 83.0°  | 68°  | -6°  | 10.6\ | 14:27 | 18:53 | +21°  | 23:12 | 20:31 | +17° SGR |

# Ephemeride für den Kleinplaneten (18) Melpomene

Alle Zeiten gelten für den Standort Boden (50.5° N, 7.9° O)

Die TOpt bezieht sich auf eine Sonnenhöhe von -16°

| Datum         | RA (2000.0) | D (2000.0)  | r            | Entferng. | Elong.   | Azim     | Höhe     | Hell  | Aufg. | Kulm. | KHöh | Untg. | TOpt  | TOptH | Stb. |
|---------------|-------------|-------------|--------------|-----------|----------|----------|----------|-------|-------|-------|------|-------|-------|-------|------|
| So 07.10.2012 | 00:00       | 18h26'13.3" | -18°38' 3.0" | 2.061     | aE 1.940 | aE 82.4° | 68° -7°  | 10.6\ | 14:25 | 18:50 | +21° | 23:09 | 20:29 | +17°  | SGR  |
| Mo 08.10.2012 | 00:00       | 18h27'45.7" | -18°42' 6.4" | 2.059     | aE 1.949 | aE 81.8° | 69° -7°  | 10.6\ | 14:23 | 18:48 | +21° | 23:06 | 20:27 | +17°  | SGR  |
| Di 09.10.2012 | 00:00       | 18h29'19.1" | -18°46' 3.2" | 2.056     | aE 1.958 | aE 81.1° | 69° -7°  | 10.6\ | 14:21 | 18:45 | +21° | 23:03 | 20:25 | +17°  | SGR  |
| Mi 10.10.2012 | 00:00       | 18h30'53.8" | -18°49'53.1" | 2.054     | aE 1.966 | aE 80.5° | 70° -8°  | 10.7\ | 14:19 | 18:43 | +21° | 23:00 | 20:23 | +17°  | SGR  |
| Do 11.10.2012 | 00:00       | 18h32'29.5" | -18°53'36.1" | 2.051     | aE 1.975 | aE 79.9° | 70° -8°  | 10.7\ | 14:17 | 18:41 | +21° | 22:58 | 20:21 | +17°  | SGR  |
| Fr 12.10.2012 | 00:00       | 18h34' 6.4" | -18°57'12.2" | 2.049     | aE 1.984 | aE 79.3° | 70° -9°  | 10.7\ | 14:15 | 18:38 | +21° | 22:55 | 20:19 | +17°  | SGR  |
| Sa 13.10.2012 | 00:00       | 18h35'44.3" | -19° 0'41.2" | 2.046     | aE 1.993 | aE 78.7° | 71° -9°  | 10.7\ | 14:13 | 18:36 | +20° | 22:52 | 20:17 | +17°  | SGR  |
| So 14.10.2012 | 00:00       | 18h37'23.4" | -19° 4' 3.1" | 2.044     | aE 2.002 | aE 78.1° | 71° -9°  | 10.7\ | 14:11 | 18:34 | +20° | 22:50 | 20:14 | +17°  | SGR  |
| Mo 15.10.2012 | 00:00       | 18h39' 3.5" | -19° 7'17.8" | 2.042     | aE 2.011 | aE 77.5° | 72° -10° | 10.7\ | 14:09 | 18:32 | +20° | 22:47 | 20:12 | +17°  | SGR  |
| Di 16.10.2012 | 00:00       | 18h40'44.6" | -19°10'25.2" | 2.039     | aE 2.019 | aE 76.9° | 72° -10° | 10.7\ | 14:07 | 18:29 | +20° | 22:45 | 20:11 | +17°  | SGR  |
| Mi 17.10.2012 | 00:00       | 18h42'26.8" | -19°13'25.2" | 2.037     | aE 2.028 | aE 76.3° | 72° -10° | 10.7\ | 14:06 | 18:27 | +20° | 22:42 | 20:09 | +17°  | SGR  |
| Do 18.10.2012 | 00:00       | 18h44'10.0" | -19°16'17.8" | 2.034     | aE 2.037 | aE 75.7° | 73° -11° | 10.7\ | 14:04 | 18:25 | +20° | 22:40 | 20:07 | +17°  | SGR  |
| Fr 19.10.2012 | 00:00       | 18h45'54.2" | -19°19' 2.9" | 2.032     | aE 2.045 | aE 75.1° | 73° -11° | 10.7\ | 14:02 | 18:23 | +20° | 22:37 | 20:05 | +17°  | SGR  |
| Sa 20.10.2012 | 00:00       | 18h47'39.4" | -19°21'40.3" | 2.030     | aE 2.054 | aE 74.5° | 74° -12° | 10.7\ | 14:00 | 18:21 | +20° | 22:35 | 20:03 | +16°  | SGR  |
| So 21.10.2012 | 00:00       | 18h49'25.6" | -19°24'10.2" | 2.027     | aE 2.062 | aE 74.0° | 74° -12° | 10.7\ | 13:58 | 18:18 | +20° | 22:32 | 20:01 | +16°  | SGR  |
| Mo 22.10.2012 | 00:00       | 18h51'12.7" | -19°26'32.3" | 2.025     | aE 2.071 | aE 73.4° | 74° -12° | 10.7\ | 13:56 | 18:16 | +20° | 22:30 | 19:59 | +16°  | SGR  |
| Di 23.10.2012 | 00:00       | 18h53' 0.8" | -19°28'46.7" | 2.023     | aE 2.080 | aE 72.8° | 75° -13° | 10.7\ | 13:54 | 18:14 | +20° | 22:28 | 19:57 | +16°  | SGR  |
| Mi 24.10.2012 | 00:00       | 18h54'49.7" | -19°30'53.2" | 2.020     | aE 2.088 | aE 72.2° | 75° -13° | 10.7\ | 13:52 | 18:12 | +20° | 22:25 | 19:56 | +16°  | SGR  |
| Do 25.10.2012 | 00:00       | 18h56'39.6" | -19°32'51.9" | 2.018     | aE 2.096 | aE 71.7° | 75° -13° | 10.7\ | 13:51 | 18:10 | +20° | 22:23 | 19:54 | +16°  | SGR  |
| Fr 26.10.2012 | 00:00       | 18h58'30.3" | -19°34'42.6" | 2.016     | aE 2.105 | aE 71.1° | 76° -14° | 10.7\ | 13:49 | 18:08 | +20° | 22:21 | 19:52 | +16°  | SGR  |
| Sa 27.10.2012 | 00:00       | 19h 0'21.9" | -19°36'25.3" | 2.013     | aE 2.113 | aE 70.5° | 76° -14° | 10.7\ | 13:47 | 18:06 | +20° | 22:18 | 19:50 | +16°  | SGR  |
| So 28.10.2012 | 00:00       | 19h 2'19.1" | -19°38' 3.6" | 2.011     | aE 2.122 | aE 69.9° | 88° -24° | 10.7\ | 12:45 | 17:04 | +20° | 21:17 | 18:49 | +16°  | SGR  |
| Mo 29.10.2012 | 00:00       | 19h 4'12.4" | -19°39'29.8" | 2.008     | aE 2.130 | aE 69.4° | 88° -24° | 10.8\ | 12:43 | 17:02 | +20° | 21:15 | 18:47 | +16°  | SGR  |
| Di 30.10.2012 | 00:00       | 19h 6' 6.5" | -19°40'47.8" | 2.006     | aE 2.138 | aE 68.8° | 88° -25° | 10.8\ | 12:41 | 17:00 | +20° | 21:12 | 18:46 | +16°  | SGR  |
| Mi 31.10.2012 | 00:00       | 19h 8' 1.4" | -19°41'57.7" | 2.004     | aE 2.146 | aE 68.3° | 89° -25° | 10.8\ | 12:39 | 16:58 | +20° | 21:10 | 18:44 | +16°  | SGR  |
| Do 01.11.2012 | 00:00       | 19h 9'57.2" | -19°42'59.2" | 2.002     | aE 2.155 | aE 67.7° | 89° -25° | 10.8\ | 12:37 | 16:56 | +20° | 21:08 | 18:42 | +16°  | SGR  |
| Fr 02.11.2012 | 00:00       | 19h11'53.7" | -19°43'52.4" | 1.999     | aE 2.163 | aE 67.2° | 89° -26° | 10.8\ | 12:35 | 16:54 | +20° | 21:06 | 18:41 | +16°  | SGR  |
| Sa 03.11.2012 | 00:00       | 19h13'51.0" | -19°44'37.2" | 1.997     | aE 2.171 | aE 66.6° | 90° -26° | 10.8\ | 12:33 | 16:52 | +20° | 21:04 | 18:39 | +16°  | SGR  |
| So 04.11.2012 | 00:00       | 19h15'49.0" | -19°45'13.6" | 1.995     | aE 2.179 | aE 66.1° | 90° -26° | 10.8\ | 12:31 | 16:50 | +20° | 21:02 | 18:38 | +16°  | SGR  |
| Mo 05.11.2012 | 00:00       | 19h17'47.8" | -19°45'41.5" | 1.992     | aE 2.187 | aE 65.5° | 91° -26° | 10.8\ | 12:29 | 16:48 | +20° | 21:00 | 18:37 | +16°  | SGR  |
| Di 06.11.2012 | 00:00       | 19h19'47.3" | -19°46' 0.8" | 1.990     | aE 2.195 | aE 65.0° | 91° -27° | 10.8\ | 12:27 | 16:46 | +20° | 20:58 | 18:35 | +16°  | SGR  |
| Mi 07.11.2012 | 00:00       | 19h21'47.5" | -19°46'11.5" | 1.988     | aE 2.203 | aE 64.5° | 91° -27° | 10.8\ | 12:25 | 16:44 | +20° | 20:56 | 18:34 | +16°  | SGR  |
| Do 08.11.2012 | 00:00       | 19h23'48.5" | -19°46'13.6" | 1.986     | aE 2.210 | aE 63.9° | 92° -27° | 10.8\ | 12:23 | 16:42 | +20° | 20:54 | 18:33 | +16°  | SGR  |
| Fr 09.11.2012 | 00:00       | 19h25'50.1" | -19°46' 7.1" | 1.983     | aE 2.218 | aE 63.4° | 92° -28° | 10.8\ | 12:22 | 16:40 | +20° | 20:52 | 18:31 | +16°  | SGR  |
| Sa 10.11.2012 | 00:00       | 19h27'52.4" | -19°45'51.7" | 1.981     | aE 2.226 | aE 62.9° | 92° -28° | 10.8\ | 12:20 | 16:38 | +20° | 20:50 | 18:30 | +15°  | SGR  |
| So 11.11.2012 | 00:00       | 19h29'55.4" | -19°45'27.7" | 1.979     | aE 2.234 | aE 62.3° | 93° -28° | 10.8\ | 12:18 | 16:36 | +20° | 20:48 | 18:29 | +15°  | SGR  |
| Mo 12.11.2012 | 00:00       | 19h31'59.0" | -19°44'54.8" | 1.977     | aE 2.241 | aE 61.8° | 93° -29° | 10.8\ | 12:16 | 16:34 | +20° | 20:47 | 18:28 | +15°  | SGR  |
| Di 13.11.2012 | 00:00       | 19h34' 3.3" | -19°44'13.1" | 1.975     | aE 2.249 | aE 61.3° | 94° -29° | 10.8\ | 12:14 | 16:33 | +20° | 20:45 | 18:27 | +15°  | SGR  |
| Mi 14.11.2012 | 00:00       | 19h36' 8.2" | -19°43'22.5" | 1.972     | aE 2.256 | aE 60.8° | 94° -29° | 10.8\ | 12:12 | 16:31 | +20° | 20:43 | 18:26 | +15°  | SGR  |
| Do 15.11.2012 | 00:00       | 19h38'13.8" | -19°42'23.1" | 1.970     | aE 2.264 | aE 60.3° | 94° -29° | 10.8\ | 12:10 | 16:29 | +20° | 20:41 | 18:25 | +15°  | SGR  |

# Ephemeride für den Kleinplaneten (18) Melpomene

Alle Zeiten gelten für den Standort Boden (50.5° N, 7.9° O)

Die TOpt bezieht sich auf eine Sonnenhöhe von -16°

| Datum         | RA (2000.0) | D (2000.0)  | r            | Entferng. | Elong.   | Azim  | Höhe      | Hell  | Aufg. | Kulm. | KHöh | Untg. | TOpt  | TOptH | Stb. |
|---------------|-------------|-------------|--------------|-----------|----------|-------|-----------|-------|-------|-------|------|-------|-------|-------|------|
| Fr 16.11.2012 | 00:00       | 19h40'19.9" | -19°41'14.7" | 1.968 aE  | 2.271 aE | 59.7° | 95° -30°  | 10.8\ | 12:08 | 16:27 | +20° | 20:40 | 18:24 | +15°  | SGR  |
| Sa 17.11.2012 | 00:00       | 19h42'26.7" | -19°39'57.4" | 1.966 aE  | 2.279 aE | 59.2° | 95° -30°  | 10.8\ | 12:06 | 16:25 | +20° | 20:38 | 18:23 | +15°  | SGR  |
| So 18.11.2012 | 00:00       | 19h44'34.0" | -19°38'31.2" | 1.964 aE  | 2.286 aE | 58.7° | 96° -30°  | 10.8\ | 12:04 | 16:23 | +20° | 20:36 | 18:22 | +15°  | SGR  |
| Mo 19.11.2012 | 00:00       | 19h46'41.9" | -19°36'56.0" | 1.961 aE  | 2.293 aE | 58.2° | 96° -31°  | 10.8\ | 12:02 | 16:22 | +20° | 20:35 | 18:21 | +15°  | SGR  |
| Di 20.11.2012 | 00:00       | 19h48'50.3" | -19°35'11.9" | 1.959 aE  | 2.301 aE | 57.7° | 96° -31°  | 10.8\ | 12:00 | 16:20 | +20° | 20:33 | 18:20 | +15°  | SGR  |
| Mi 21.11.2012 | 00:00       | 19h50'59.2" | -19°33'18.8" | 1.957 aE  | 2.308 aE | 57.2° | 97° -31°  | 10.8\ | 11:58 | 16:18 | +20° | 20:31 | 18:19 | +15°  | SGR  |
| Do 22.11.2012 | 00:00       | 19h53' 8.7" | -19°31'16.7" | 1.955 aE  | 2.315 aE | 56.7° | 97° -31°  | 10.8\ | 11:56 | 16:16 | +20° | 20:30 | 18:18 | +15°  | SGR  |
| Fr 23.11.2012 | 00:00       | 19h55'18.7" | -19°29' 5.7" | 1.953 aE  | 2.322 aE | 56.2° | 97° -32°  | 10.8\ | 11:55 | 16:14 | +20° | 20:28 | 18:18 | +15°  | CAP  |
| Sa 24.11.2012 | 00:00       | 19h57'29.1" | -19°26'45.6" | 1.951 aE  | 2.329 aE | 55.7° | 98° -32°  | 10.8\ | 11:53 | 16:13 | +20° | 20:27 | 18:17 | +15°  | CAP  |
| So 25.11.2012 | 00:00       | 19h59'40.1" | -19°24'16.6" | 1.949 aE  | 2.336 aE | 55.2° | 98° -32°  | 10.8\ | 11:51 | 16:11 | +20° | 20:25 | 18:16 | +15°  | CAP  |
| Mo 26.11.2012 | 00:00       | 20h 1'51.5" | -19°21'38.5" | 1.947 aE  | 2.343 aE | 54.7° | 99° -32°  | 10.8\ | 11:49 | 16:09 | +20° | 20:24 | 18:16 | +15°  | CAP  |
| Di 27.11.2012 | 00:00       | 20h 4' 3.3" | -19°18'51.5" | 1.944 aE  | 2.350 aE | 54.2° | 99° -33°  | 10.8\ | 11:47 | 16:08 | +20° | 20:22 | 18:15 | +15°  | CAP  |
| Mi 28.11.2012 | 00:00       | 20h 6'15.6" | -19°15'55.4" | 1.942 aE  | 2.356 aE | 53.7° | 99° -33°  | 10.8\ | 11:45 | 16:06 | +20° | 20:21 | 18:15 | +15°  | CAP  |
| Do 29.11.2012 | 00:00       | 20h 8'28.4" | -19°12'50.4" | 1.940 aE  | 2.363 aE | 53.2° | 100° -33° | 10.8\ | 11:43 | 16:04 | +20° | 20:20 | 18:14 | +15°  | CAP  |
| Fr 30.11.2012 | 00:00       | 20h10'41.5" | -19° 9'36.3" | 1.938 aE  | 2.370 aE | 52.7° | 100° -33° | 10.8/ | 11:41 | 16:02 | +20° | 20:18 | 18:14 | +15°  | CAP  |
| Sa 01.12.2012 | 00:00       | 20h12'55.1" | -19° 6'13.2" | 1.936 aE  | 2.377 aE | 52.2° | 101° -33° | 10.8/ | 11:38 | 16:01 | +20° | 20:17 | 18:14 | +14°  | CAP  |
| So 02.12.2012 | 00:00       | 20h15' 9.1" | -19° 2'41.0" | 1.934 aE  | 2.383 aE | 51.7° | 101° -34° | 10.8/ | 11:36 | 15:59 | +21° | 20:15 | 18:13 | +14°  | CAP  |
| Mo 03.12.2012 | 00:00       | 20h17'23.4" | -18°58'59.9" | 1.932 aE  | 2.390 aE | 51.2° | 101° -34° | 10.8/ | 11:34 | 15:57 | +21° | 20:14 | 18:13 | +14°  | CAP  |
| Di 04.12.2012 | 00:00       | 20h19'38.2" | -18°55' 9.7" | 1.930 aE  | 2.396 aE | 50.8° | 102° -34° | 10.8/ | 11:32 | 15:56 | +21° | 20:13 | 18:13 | +14°  | CAP  |
| Mi 05.12.2012 | 00:00       | 20h21'53.3" | -18°51'10.6" | 1.928 aE  | 2.403 aE | 50.3° | 102° -34° | 10.8/ | 11:30 | 15:54 | +21° | 20:12 | 18:12 | +14°  | CAP  |
| Do 06.12.2012 | 00:00       | 20h24' 8.8" | -18°47' 2.4" | 1.926 aE  | 2.409 aE | 49.8° | 103° -35° | 10.8/ | 11:28 | 15:52 | +21° | 20:10 | 18:12 | +14°  | CAP  |
| Fr 07.12.2012 | 00:00       | 20h26'24.7" | -18°42'45.3" | 1.924 aE  | 2.415 aE | 49.3° | 103° -35° | 10.8/ | 11:26 | 15:51 | +21° | 20:09 | 18:12 | +14°  | CAP  |
| Sa 08.12.2012 | 00:00       | 20h28'40.9" | -18°38'19.1" | 1.922 aE  | 2.422 aE | 48.8° | 104° -35° | 10.8/ | 11:24 | 15:49 | +21° | 20:08 | 18:12 | +14°  | CAP  |
| So 09.12.2012 | 00:00       | 20h30'57.4" | -18°33'44.0" | 1.920 aE  | 2.428 aE | 48.4° | 104° -35° | 10.8/ | 11:22 | 15:47 | +21° | 20:07 | 18:12 | +14°  | CAP  |
| Mo 10.12.2012 | 00:00       | 20h33'14.3" | -18°29' 0.0" | 1.918 aE  | 2.434 aE | 47.9° | 104° -35° | 10.8/ | 11:20 | 15:46 | +21° | 20:06 | 18:12 | +14°  | CAP  |
| Di 11.12.2012 | 00:00       | 20h35'31.5" | -18°24' 7.1" | 1.916 aE  | 2.440 aE | 47.4° | 105° -36° | 10.8/ | 11:17 | 15:44 | +21° | 20:04 | 18:12 | +14°  | CAP  |
| Mi 12.12.2012 | 00:00       | 20h37'49.0" | -18°19' 5.2" | 1.914 aE  | 2.446 aE | 47.0° | 105° -36° | 10.8/ | 11:15 | 15:42 | +21° | 20:03 | 18:12 | +14°  | CAP  |
| Do 13.12.2012 | 00:00       | 20h40' 6.8" | -18°13'54.6" | 1.912 aE  | 2.452 aE | 46.5° | 106° -36° | 10.8/ | 11:13 | 15:41 | +21° | 20:02 | 18:13 | +13°  | CAP  |
| Fr 14.12.2012 | 00:00       | 20h42'24.9" | -18° 8'35.1" | 1.911 aE  | 2.458 aE | 46.0° | 106° -36° | 10.8/ | 11:11 | 15:39 | +21° | 20:01 | 18:13 | +13°  | CAP  |
| Sa 15.12.2012 | 00:00       | 20h44'43.3" | -18° 3' 6.8" | 1.909 aE  | 2.464 aE | 45.6° | 107° -36° | 10.8/ | 11:09 | 15:37 | +22° | 20:00 | 18:13 | +13°  | CAP  |
| So 16.12.2012 | 00:00       | 20h47' 1.9" | -17°57'29.8" | 1.907 aE  | 2.470 aE | 45.1° | 107° -36° | 10.8/ | 11:07 | 15:36 | +22° | 19:59 | 18:13 | +13°  | CAP  |
| Mo 17.12.2012 | 00:00       | 20h49'20.8" | -17°51'44.1" | 1.905 aE  | 2.475 aE | 44.6° | 108° -37° | 10.8/ | 11:04 | 15:34 | +22° | 19:58 | 18:14 | +13°  | CAP  |
| Di 18.12.2012 | 00:00       | 20h51'40.0" | -17°45'49.8" | 1.903 aE  | 2.481 aE | 44.2° | 108° -37° | 10.8/ | 11:02 | 15:32 | +22° | 19:57 | 18:14 | +13°  | CAP  |
| Mi 19.12.2012 | 00:00       | 20h53'59.4" | -17°39'46.9" | 1.901 aE  | 2.487 aE | 43.7° | 108° -37° | 10.8/ | 11:00 | 15:31 | +22° | 19:56 | 18:14 | +13°  | CAP  |
| Do 20.12.2012 | 00:00       | 20h56'19.0" | -17°33'35.4" | 1.899 aE  | 2.492 aE | 43.3° | 109° -37° | 10.8/ | 10:58 | 15:29 | +22° | 19:55 | 18:15 | +13°  | CAP  |
| Fr 21.12.2012 | 00:00       | 20h58'38.9" | -17°27'15.5" | 1.898 aE  | 2.498 aE | 42.8° | 109° -37° | 10.8/ | 10:55 | 15:28 | +22° | 19:54 | 18:15 | +13°  | CAP  |
| Sa 22.12.2012 | 00:00       | 21h 0'58.9" | -17°20'47.1" | 1.896 aE  | 2.503 aE | 42.4° | 110° -37° | 10.8/ | 10:53 | 15:26 | +22° | 19:53 | 18:16 | +13°  | CAP  |
| So 23.12.2012 | 00:00       | 21h 3'19.2" | -17°14'10.4" | 1.894 aE  | 2.508 aE | 41.9° | 110° -38° | 10.8/ | 10:51 | 15:24 | +22° | 19:52 | 18:16 | +12°  | CAP  |
| Mo 24.12.2012 | 00:00       | 21h 5'39.6" | -17° 7'25.3" | 1.892 aE  | 2.514 aE | 41.5° | 111° -38° | 10.8/ | 10:49 | 15:23 | +22° | 19:51 | 18:17 | +12°  | CAP  |
| Di 25.12.2012 | 00:00       | 21h 8' 0.2" | -17° 0'31.9" | 1.890 aE  | 2.519 aE | 41.0° | 111° -38° | 10.8/ | 10:46 | 15:21 | +23° | 19:50 | 18:18 | +12°  | CAP  |

## Ephemeride für den Kleinplaneten (18) Melpomene

Alle Zeiten gelten für den Standort Boden (50.5° N, 7.9° O)

Die TOpt bezieht sich auf eine Sonnenhöhe von -16°

| Datum         | RA (2000.0) | D (2000.0)               | r        | Entferng. | Elong. | Azim | Höhe | Hell  | Aufg. | Kulm. | KHöh | Untg. | TOpt  | TOptH | Stb. |
|---------------|-------------|--------------------------|----------|-----------|--------|------|------|-------|-------|-------|------|-------|-------|-------|------|
| Mi 26.12.2012 | 00:00       | 21h10'21.0" -16°53'30.3" | 1.889 aE | 2.524 aE  | 40.6°  | 112° | -38° | 10.8/ | 10:44 | 15:20 | +23° | 19:49 | 18:18 | +12°  | CAP  |
| Do 27.12.2012 | 00:00       | 21h12'42.0" -16°46'20.5" | 1.887 aE | 2.529 aE  | 40.1°  | 112° | -38° | 10.8/ | 10:42 | 15:18 | +23° | 19:48 | 18:19 | +12°  | CAP  |
| Fr 28.12.2012 | 00:00       | 21h15' 3.1" -16°39' 2.6" | 1.885 aE | 2.535 aE  | 39.7°  | 113° | -38° | 10.8/ | 10:39 | 15:17 | +23° | 19:48 | 18:20 | +12°  | CAP  |
| Sa 29.12.2012 | 00:00       | 21h17'24.4" -16°31'36.6" | 1.883 aE | 2.540 aE  | 39.2°  | 113° | -38° | 10.8/ | 10:37 | 15:15 | +23° | 19:47 | 18:21 | +11°  | CAP  |
| So 30.12.2012 | 00:00       | 21h19'45.8" -16°24' 2.5" | 1.882 aE | 2.545 aE  | 38.8°  | 114° | -39° | 10.8/ | 10:35 | 15:13 | +23° | 19:46 | 18:21 | +11°  | CAP  |
| Mo 31.12.2012 | 00:00       | 21h22' 7.4" -16°16'20.5" | 1.880 aE | 2.550 aE  | 38.3°  | 114° | -39° | 10.8/ | 10:33 | 15:12 | +23° | 19:45 | 18:22 | +11°  | CAP  |

### Legende:

|            |  |
|------------|--|
| Datum      | = Berechnungsdatum                         |
| RA, D      | = Rektaszension, Deklination (2000.0)      |
| r          | = Abstand zur Sonne in aE                  |
| Entferng.  | = Abstand zur Erde in aE                   |
| Elong.     | = Elongation                               |
| Azim, Höhe | = Azimut und Höhe zum Berechnungszeitpunkt |
| Hell       | = Helligkeit in Mag. und Tendenz           |
| Aufg       | = Aufgangszeit                             |
| Kulm, KHöh | = Kulminationszeit und -höhe               |
| Untg       | = Untergangszeit                           |
| TOpt, Höhe | = Optimale Beobachtungszeit und -höhe      |
| Stb        | = Sternbild zu RA und D                    |